



AV710-X4-A

4CH 3G-SDI Military AGX Orin IP65 Computer

User's Manual



User's Manual
Revision Date: Jun. 06. 2024

Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

- All rights reserved. No part of this publication may be reproduced in any form or by any means, without prior written permission from the publisher.
- All trademarks are the properties of the respective owners.
- All product specifications are subject to change without prior notice

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

Revision History

| Revision | Date (yyyy/mm/dd) | Changes |
|-------------|-------------------|-----------------|
| Version 1.0 | 2024/06/06 | Initial release |
| | | |
| | | |

Packing list

- DVD (Driver + Quick Installation Guide)
- System Device
- Cable kit: DC-IN cable, 2x LAN cable, USB3.0 with M20 cable



If any of the above items is damaged or missing, please contact your local distributor.

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

Table of contents

| | |
|--|----|
| Safety Information | 1 |
| Electrical safety | 1 |
| Operation safety | 1 |
| Statement..... | 1 |
| Packing list..... | 2 |
| Chapter 1: Product Introduction..... | 4 |
| 1-1 Key Features..... | 4 |
| 1-2 Specification | 5 |
| 1-3 Block Diagram | 8 |
| 1-4 Board Visuals..... | 8 |
| 1-5 Mechanical Dimensions | 9 |
| 1-6 Ordering Information | 10 |
| Chapter 2: Pin Define and Connectors Locations | 11 |
| 2-1 Pin Define..... | 11 |
| 2-2 Connector Location | 13 |
| Chapter 3 Software Information | 14 |
| 3-1 Software Configuration..... | 14 |
| 3-2 System Recovery | 14 |
| 3-3 Install the driver for Capture Card | 29 |
| 3-4 Change Root File System to M.2 SSD Directly..... | 31 |
| Appendix..... | 39 |

Chapter 1: Product Introduction

7STARLAKE's AV710-X4-series Edge Inference System harnesses the power of NVIDIA® Jetson™ AGX Orin modules to realize industry leading smart automation across a wide range of applications, enabling tasks such as automatic obstacle identifying, collision avoiding, safety navigation, detour adjustments, and automatic adjustments to a number of environmental factors.

AV710-X4 feature intelligent, flexible, and robust computing power to automate intra-logistic workflows in both industrial and commercial environments alike. Boasting comprehensive industrial I/O and visual inferencing capabilities all in a compact system, AV710-X4 supports 1x

HDMI display, 2x GbE PSE ports (optional), 2x USB 3.1 Gen 2 ports (plus a USB 3.2 Gen 2 Type-C OTG port for BSP flashing), 1x isolated CAN bus, 1x COM (RS-232/422/485), 2x M.2 M key NVME (for additional storage or expansion options), 1x M.2 2230 E key slot to support Wi-Fi communications, 1x 3042/3052 B key & SIM slot for 4/5G communications, 2in/3out GPIO pin and MIPI connector for extra CSI or GMSL camera support.

1-1 Key Features

- Deep learning acceleration with NVIDIA® Jetson™ AGX Orin
- 2x USB 3.1 Gen 2, 2x GbE PSE ports, 1x 10G SFP+ Base (optional), 1x Type-C USB 3.2 Gen 2
- Internal function expansions by M.2 E key 2230, 3042/3052 B key
- Compact system: 250(W) x 220(D) x 100(H) mm
- 12V~32V DC input
- Additional storage by 2x M.2 key 2242/2280
- Support 4CH 3G-SDI input
- Support MIPI connector for extra CSI & GMSL camera

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

1-2 Specification

System

| | |
|----------------|--|
| AI Performance | 200 TOPS |
| CPU module | Ampere GPU + Arm Cortex-A78AE CPU + 32GB LPDDR5 + 64GB eMMC 5.1 |
| GPU | NVIDIA Ampere architecture with 1792 NVIDIA® CUDA® cores and 56 Tensor Cores, max freq. 930MHz |
| CPU | 8-core Arm® Cortex®-A78AE v8.2 64-bit CPU, 2MB L2 + 4MB L3, max freq. 2.2GHz |
| Memory | 32GB 256-bit LPDDR5, 204.8 GB/s |
| Expansion Slot | 2x M.2 2280 M key (PCIe x4) 1x M.2 3042/3052 B key 1x M.2 2030 E key 2x UART 1x I2S 1x I2C 2x SPI 1x CAN 1x Micro SD 1x SIM |

Display

| | |
|----------------------------|--|
| Display | 1x HDMI 2.0(max resolution 3840x2160) |
| Video Input | 4x SDI |
| Display Video Format | YV12, NV12, YUY2, RGB24, RGB32, P010 |
| Video RAW Data Resolution | 3G-SDI 1920×1080p@60/50fps HD-SDI 1920×1080p@30/25/24fps 1920×1080i@60/50fps 1280×720p@60/50fps SD-SDI 720×480i@60fps 720×576i@50fps |
| Recording Video Format | H.264 (Software Compression) |
| Recording Video Resolution | 3G-SDI 1920×1080p@60/50fps HD-SDI |

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

1920×1080p@30/25/24fps

1920×1080i@60/50fps

1280×720p@60/50fps

SD-SDI

720×480i@60fps

720×576i@50fps

| | |
|-------------|-----------------------|
| Video Audio | 4x SDI Embedded Audio |
|-------------|-----------------------|

Storage

| | |
|----------|---------------|
| On Board | 64GB eMMC 5.1 |
|----------|---------------|

| | |
|-----|--------------------------------------|
| M.2 | 1x PCIe x4 M.2 2280 M-Key, up to 2TB |
|-----|--------------------------------------|

Front I/O

| | |
|----------|---|
| Power In | 12V~32V DC-IN with M12 waterproof connector |
|----------|---|

| | |
|----|---|
| X1 | 1x 1GbE LAN with M12 waterproof connector |
|----|---|

| | |
|----|---|
| X2 | 1x 1GbE LAN with M12 waterproof connector |
|----|---|

| | |
|----|--|
| X3 | 1x USB3.0, with M20 waterproof connector |
|----|--|

| | |
|----|----------------------------|
| X4 | 1x HDMI with M20 connector |
|----|----------------------------|

| | |
|-----|--------------------------------------|
| BNC | 4x Channel 3G-SDI with BNC connector |
|-----|--------------------------------------|

Rear I/O

| | |
|-----|--------------------|
| GND | 1x Grounding Screw |
|-----|--------------------|

| | |
|--------------------|-----------------|
| Debug Access Panel | 1x Reset Button |
|--------------------|-----------------|

| | |
|--|-------------------|
| | 1x Recover Button |
|--|-------------------|

| | |
|--|-------------------------|
| | 1x USB Type-C for Debug |
|--|-------------------------|

| | |
|--|----------------------------|
| | 1x USB Type-C for Recovery |
|--|----------------------------|

| | |
|--|---------------|
| | 1x Reboot LED |
|--|---------------|

Power Requirement

| | |
|-------------|---------------|
| Power Input | 12V~32V DC-IN |
|-------------|---------------|

Applications, Operating System

| | |
|--------------|--|
| Applications | Commercial and Military Platforms Requiring Compliance to MIL-STD-810 Embedded Computing, Process Control, Intelligent Automation and manufacturing applications where Harsh Temperature, Shock, Vibration, Altitude, Dust and EMI Conditions. Used in all aspects |
|--------------|--|

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

of the military.

| | |
|------------------|---------------------------|
| Operating System | Ubuntu20.04 |
| JetPack Support | JetPack 5.x (5.0.2 / 5.1) |

Physical

| | |
|--------------------|--|
| Dimension | 250(W) x 220 (D) x 100 (H)mm |
| Weight | 3.3 Kg |
| Chassis | Aluminum Alloy, Corrosion Resistant |
| Heatsink | Aluminum Alloy, Corrosion Resistant |
| Finish | Anodic aluminum oxide (Color Iron gray) |
| Cooling | Natural Passive Convection/Conduction. No Moving Parts |
| Ingress Protection | IP65 |

Environmental

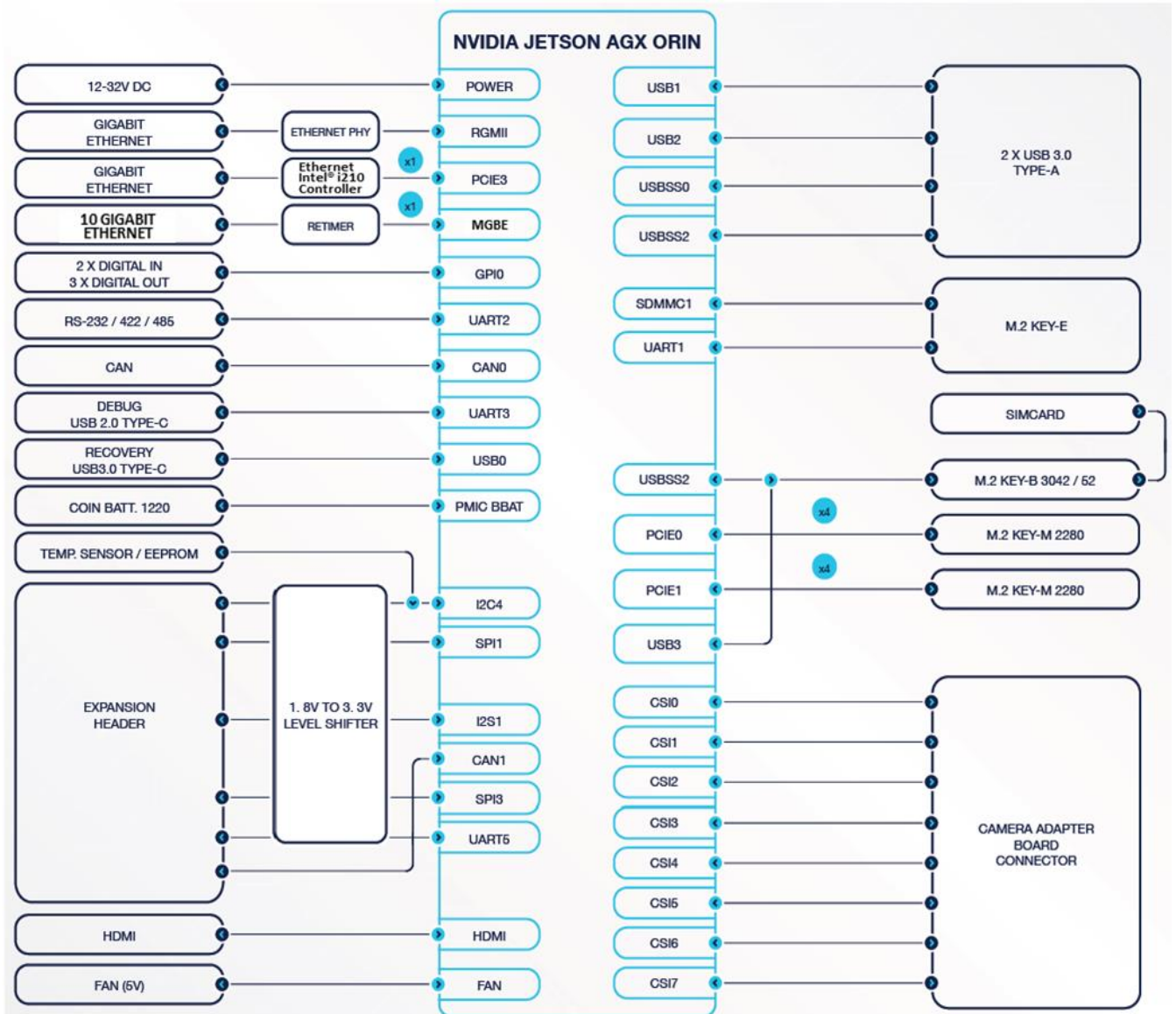
| | |
|-----------------------|---------------------------|
| Operating Temperature | -20°C to +55°C |
| Storage Temperature | -40°C to 85°C |
| Relative Humidity | 5% to 95%, non-condensing |
| RoHS | RoHS compliant |

Specifications are subject to change without notice

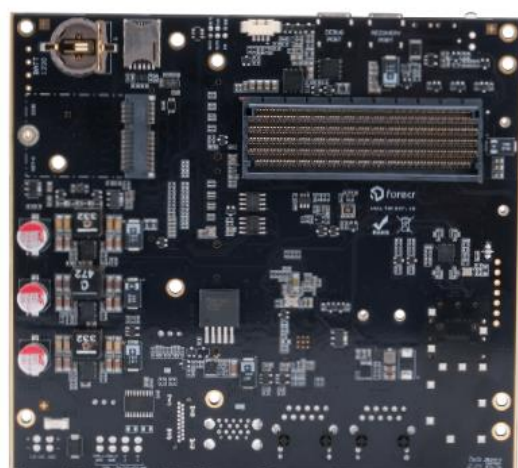
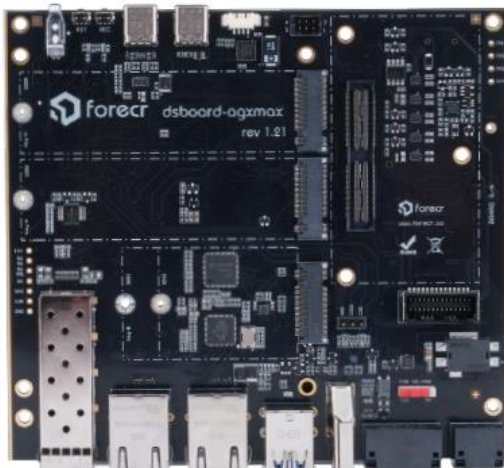
AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

1-3 Block Diagram



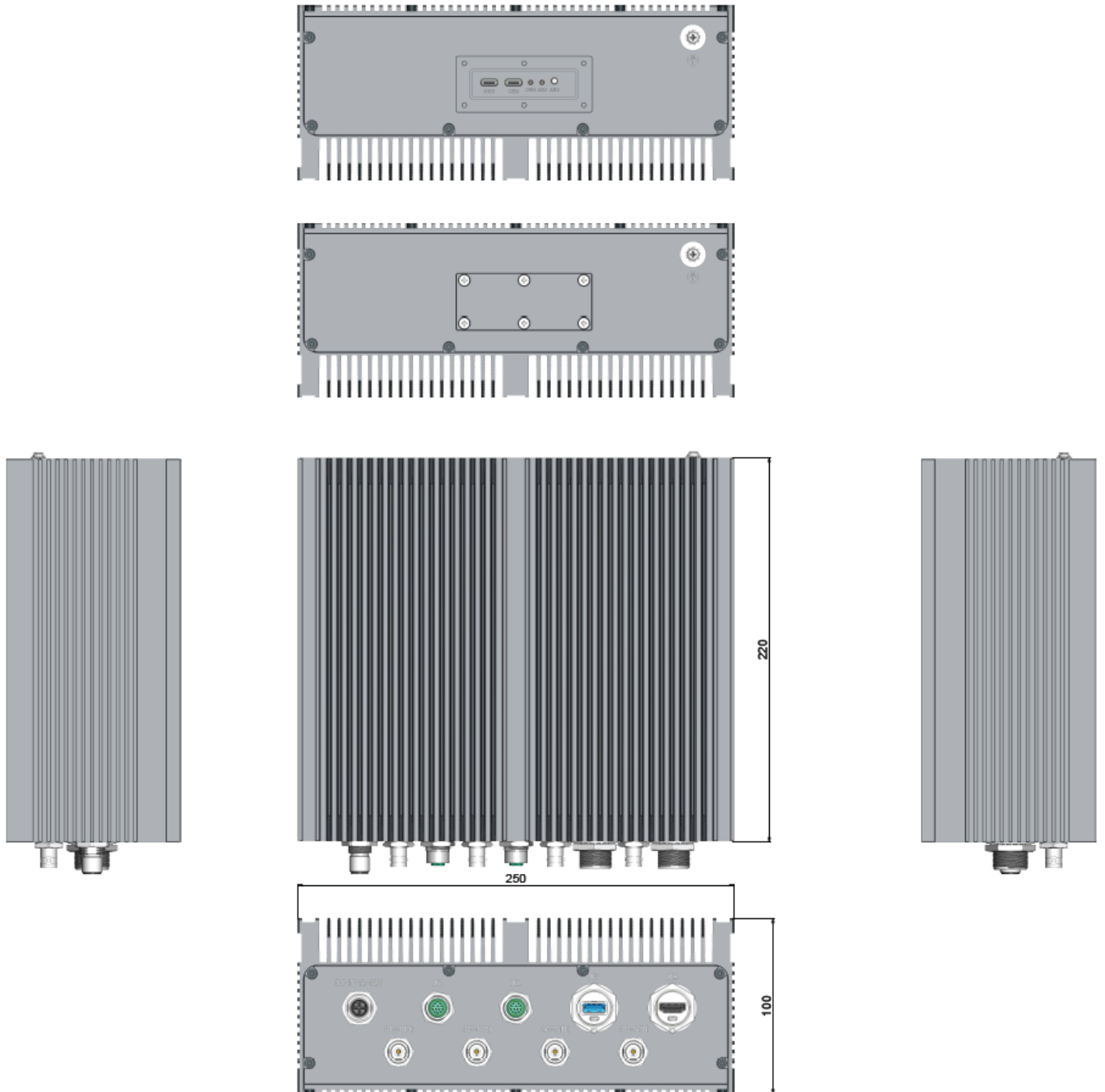
1-4 Board Visuals



AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

1-5 Mechanical Dimensions



AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

1-6 Ordering Information

| Model No. | AV710-X4-A | AV710-X4-B | AV710-X4-C | AV710-X4-D |
|-------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Sales Name | AV710-X4-32G4S | AV710-X4-32G | AV710-X4-32G-8GM | AV710-X4-32G4S-8GM |
| CPU Module | NVIDIA Jetson AGX Orin 32GB | NVIDIA Jetson AGX Orin 32GB | NVIDIA Jetson AGX Orin 32GB | NVIDIA Jetson AGX Orin 32GB |
| Memory | 32G 256bit LPDDR5x | 32G 256bit LPDDR5x | 32G 256bit LPDDR5x | 32G 256bit LPDDR5x |
| Graphics | 1x HDMI2.0 (3840 x 2160) | 1x HDMI2.0 (3840 x 2160) | 1x HDMI2.0 (3840 x 2160) | 1x HDMI2.0 (3840 x 2160) |
| Storage | 64 GB eMMC | 64 GB eMMC | 64 GB eMMC | 64 GB eMMC |
| | M.2 1TB SSD | M.2 1TB SSD | M.2 1TB SSD | M.2 1TB SSD |
| | NA | M.2 1TB SSD | M.2 1TB SSD | NA |
| I/O | | | | |
| Power In | 12V~32V DC-IN with M12 connector | 12V~32V DC-IN with M12 connector | 12V~32V DC-IN with M12 connector | 12V~32V DC-IN with M12 connector |
| X1 | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector |
| X2 | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector |
| X3 | 1x USB 3.0 with M20 connector | 1x USB 3.0 with M20 connector | 1x USB 3.0 with M20 connector | 1x USB 3.0 with M20 connector |
| X4 | 1x HDMI with M20 connector | 1x HDMI with M20 connector | 1x HDMI with M20 connector | 1x HDMI with M20 connector |
| 3G-SDI | 4x 3G-SDI | No | No | 4x 3G-SDI |
| GMSL(2) | No | NO | 4+4x GMSL | 4+4x GMSL |
| Power Button | Option | Option | Option | Option |
| Dimension | 250 x 220 x 100mm(WxDxH) | 250 x 220 x 100mm(WxDxH) | 250 x 220 x 100mm(WxDxH) | 250 x 220 x 100mm(WxDxH) |
| Ambient Codition | -20℃ ~ +55℃ | -20℃ ~ +55℃ | -20℃ ~ +55℃ | -20℃ ~ +55℃ |
| OS | Linux 20.04 | Linux 20.04 | Linux 20.04 | Linux 20.04 |
| JetPack support | Jetpack 5.X (5.0.2 / 5.1) | Jetpack 5.X (5.0.2 / 5.1) | Jetpack 5.X (5.0.2 / 5.1) | Jetpack 5.X (5.0.2 / 5.1) |

| Model No. | AV710-X4-E | AV710-X4-F | AV710-X4-G | AV710-X4-H |
|-------------------------|----------------------------------|----------------------------------|----------------------------------|----------------------------------|
| Sales Name | AV710-X4-64G | AV710-X4-64G4S | AV710-X4-64G-8GM | AV710-X4-64G4S-8GM |
| CPU Module | NVIDIA Jetson AGX Orin 64GB | NVIDIA Jetson AGX Orin 64GB | NVIDIA Jetson AGX Orin 64GB | NVIDIA Jetson AGX Orin 64GB |
| Memory | 64G 256bit LPDDR5x | 64G 256bit LPDDR5x | 64G 256bit LPDDR5x | 64G 256bit LPDDR5x |
| Graphics | 1x HDMI2.0 (3840 x 2160) | 1x HDMI2.0 (3840 x 2160) | 1x HDMI2.0 (3840 x 2160) | 1x HDMI2.0 (3840 x 2160) |
| Storage | 64 GB eMMC | 64 GB eMMC | 64 GB eMMC | 64 GB eMMC |
| | M.2 2TB SSD | M.2 2TB SSD | M.2 2TB SSD | M.2 2TB SSD |
| | M.2 2TB SSD | NA | M.2 2TB SSD | NA |
| I/O | | | | |
| Power In | 12V~32V DC-IN with M12 connector | 12V~32V DC-IN with M12 connector | 12V~32V DC-IN with M12 connector | 12V~32V DC-IN with M12 connector |
| X1 | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector |
| X2 | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector | 1x 1GbE LAN with M12 connector |
| X3 | 1x USB 3.0 with M20 connector | 1x USB 3.0 with M20 connector | 1x USB 3.0 with M20 connector | 1x USB 3.0 with M20 connector |
| X4 | 1x HDMI with M20 connector | 1x HDMI with M20 connector | 1x HDMI with M20 connector | 1x HDMI with M20 connector |
| 3G-SDI | No | 4x 3G-SDI | No | 4x 3G-SDI |
| GMSL(2) | No | No | 4+4x GMSL | 4+4x GMSL |
| Power Button | Option | Option | Option | Option |
| Dimension | 250 x 220 x 100mm(WxDxH) | 250 x 220 x 100mm(WxDxH) | 250 x 220 x 100mm(WxDxH) | 250 x 220 x 100mm(WxDxH) |
| Ambient Codition | -20℃ ~ +55℃ | -20℃ ~ +55℃ | -20℃ ~ +55℃ | -20℃ ~ +55℃ |
| OS | Linux 20.04 | Linux 20.04 | Linux 20.04 | Linux 20.04 |
| JetPack support | Jetpack 5.X (5.0.2 / 5.1) | Jetpack 5.X (5.0.2 / 5.1) | Jetpack 5.X (5.0.2 / 5.1) | Jetpack 5.X (5.0.2 / 5.1) |

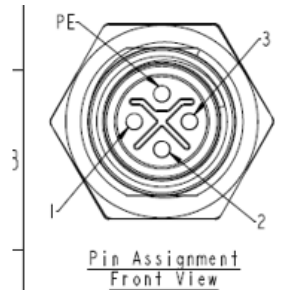
AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

Chapter 2: Pin Define and Connectors Locations

2-1 Pin Define

DC Power IN:



| | CON1 | | | | |
|---|------|---|-----|------|-------------|
| 棕 | 1/2 | ➔ | TN1 | VIN+ | 外被 接地線綠色 |
| 藍 | 3/PE | ➔ | TN2 | VIN- | 外被 接地線黑色 |



WARNING:

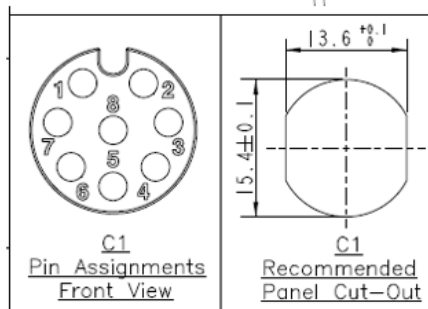
Before providing DC power to the DLAP-411-Orin, ensure the voltage and polarity provided are compatible with the DC input. Improper input voltage and/or polarity can be responsible for system damage.



NOTE:

Make sure the power adapter is connected to a socket outlet that is grounded.

X1, X2: 1GbE LAN



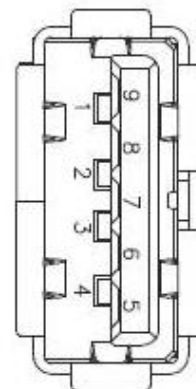
| CON1 Amphenol LTW M12A-08PFFS-SF8001 | | CON2 RJ45 W/metal | | Cable color |
|--|-----|----------------------|---|--------------|
| 1 | D1+ | 1 | 1 | White/Orange |
| 2 | D1- | 2 | 2 | Orange |
| 3 | D2+ | 3 | 3 | White/Green |
| 4 | D2- | 6 | 6 | Green |
| 5 | D3+ | 5 | 5 | White/Blue |
| 6 | D3- | 4 | 4 | Blue |
| 7 | D4+ | 7 | 7 | White/Brown |
| 8 | D4- | 8 | 8 | Brown |
| SHELL | | SHELL | | |

AV710-X4-A User's Manual

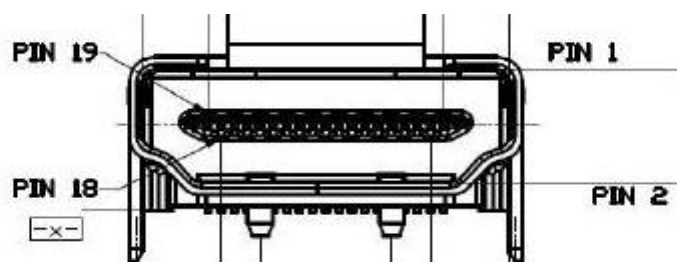
Revision Date: Jun. 06. 2024

X3: USB3.1 with 1.5A current limit

| Pin # | Signal Name |
|-------|-------------|
| 1 | USB3.0_P5VA |
| 2 | USB2_CMAN |
| 3 | USB2_CMAP |
| 4 | GND |
| 5 | USB3A_CMRXN |
| 6 | USB3A_CMRXP |
| 7 | GND |
| 8 | USB3A_CMTXN |
| 9 | USB3A_CMTXP |



X4: HDMI 2.0

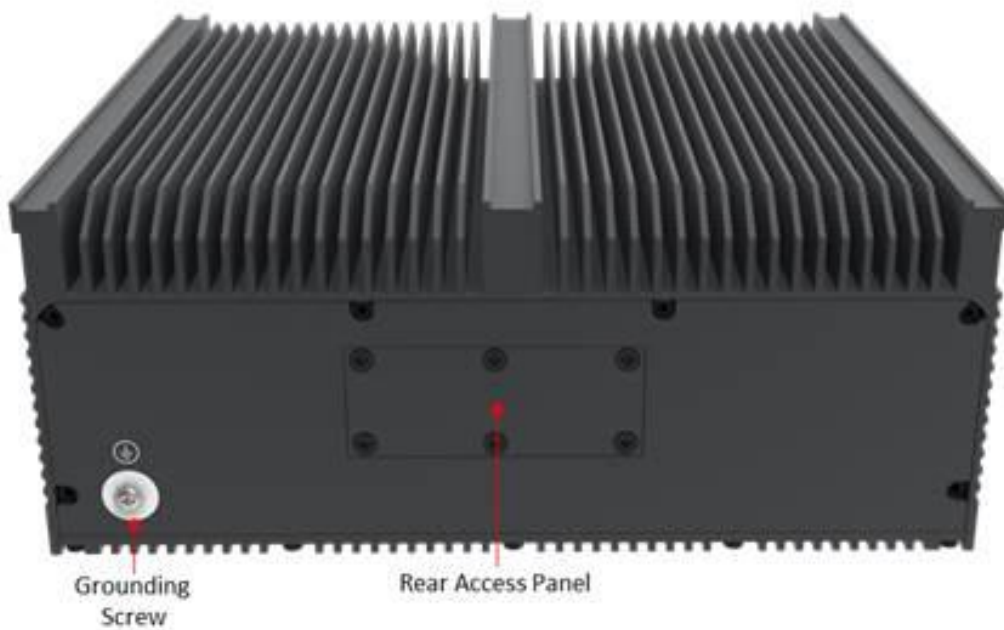
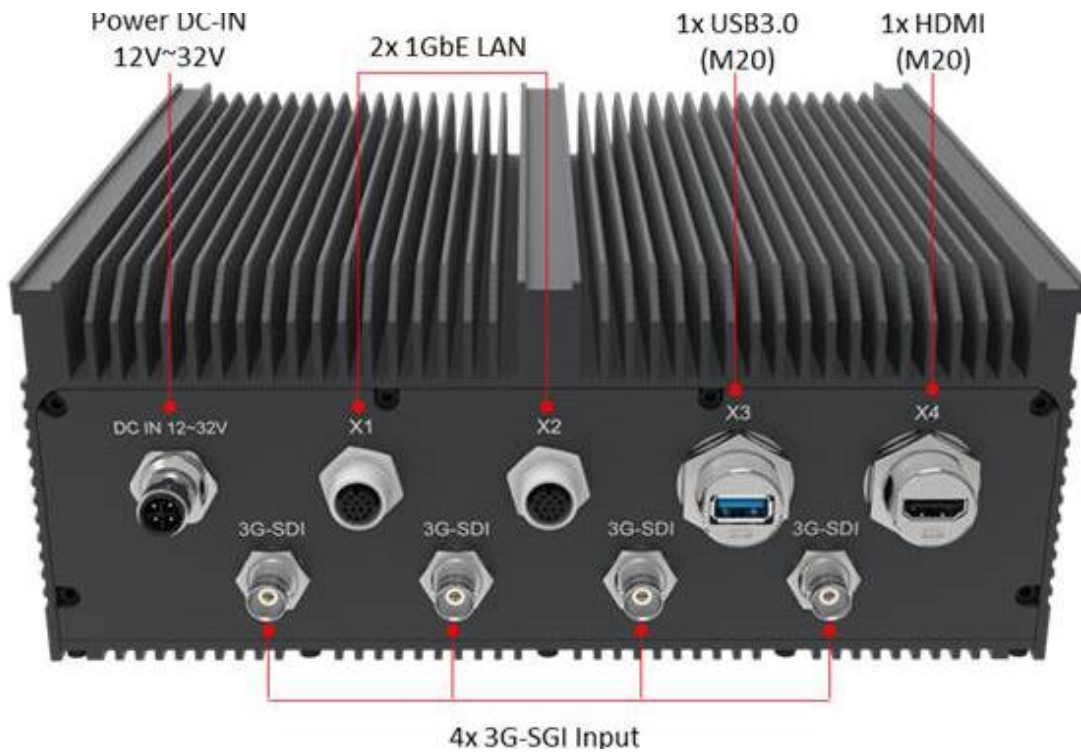


| Pin # | Signal | Pin # | Signal |
|-------|-----------------|-------|------------|
| 1 | HDMI_TX2_P | 2 | GND |
| 3 | HDMI_TX2_N | 4 | HDMI_TX1_P |
| 5 | GND | 6 | HDMI_TX1_N |
| 7 | HDMI_TX0_P | 8 | GND |
| 9 | HDMI_TX0_N | 10 | HDMI_CLK_P |
| 11 | GND | 12 | HDMI_CLK_N |
| 13 | CEC | 14 | NC |
| 15 | HDMI_SCL | 16 | HDMI_SDA |
| 17 | GND | 18 | +5 V Power |
| 19 | Hot Plug Detect | 20 | GND |
| 21 | GND | 22 | GND |
| 23 | GND | | |

AV710-X4-A User's Manual

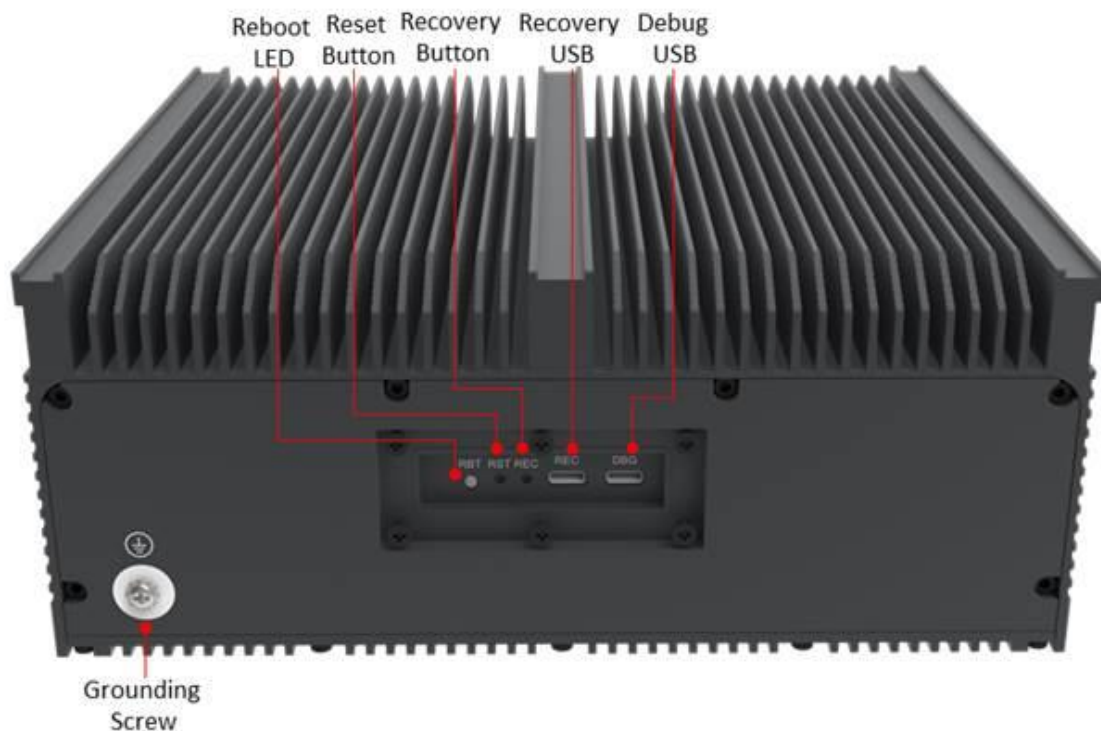
Revision Date: Jun. 06. 2024

2-2 Connector Location



AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024



Chapter 3 Software Information

3-1 Software Configuration

JetPack-5.1.1 Installation can be found here:

<https://www.forecr.io/blogs/installation/jetpack-5-1-1-installation-for-dsboard-agxmax>

3-2 System Recovery

You will need a host PC in order to flash your client device with a new system image.

Host PC

Before flashing the image, you should prepare an OTG cable (USB Type-C) for connecting to AV710-X4-A (32G4S) (recovery port), and a host PC with USB Type-A running Ubuntu 20.04.

JetPack-5.x Installation for Av710-X4-A (32G4S)

In this tutorial, we will install JetPack-5 for AV710-X4-32G4S. First, we will include our Image, DTB(Device Tree Blob) & pinmux files in Jetson OS image. Then, we will install the Jetson OS into

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

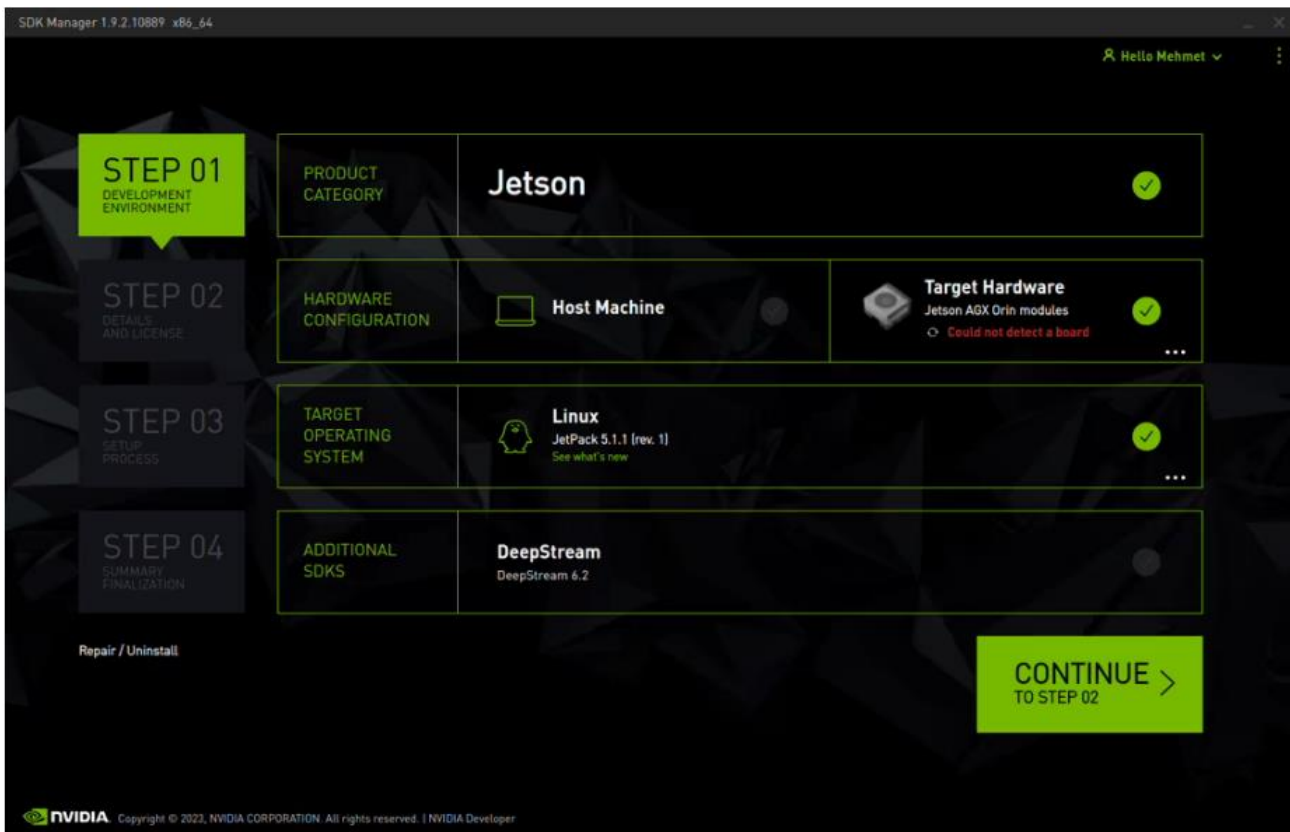
the AV710-X4-32G4S. Finally, we will install the Jetson SDK components into it.

Attention: Before starting the flashing process, please remove the 10G SFP+ Ethernet adapter on Carrier Board (DSBOARD-AGXMAX) if you have mounted it.

Attention: If you want to transfer the root file-system to an external drive and it has another JetPack version root file system, please format it before starting this blog post.

Including the Kernel Files in Jetson OS Image

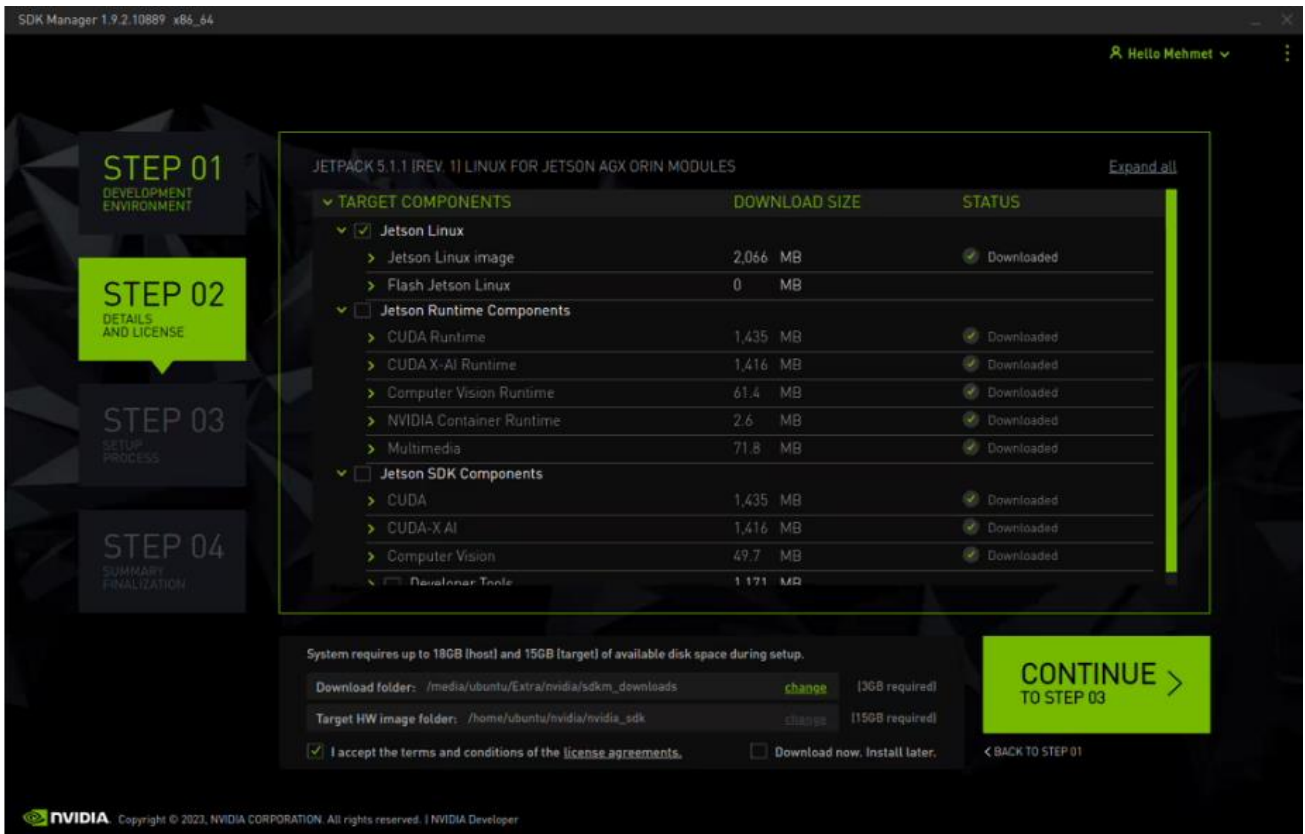
Open the NVIDIA SDK Manager (<https://developer.nvidia.com/sdk-manager>). Select the correct JetPack version (sdkmanager_2.1.0 or later version) for Target Operating System and “Jetson AGX Orin modules” for Target Hardware (The “Host Machine” components are not required). Then, continue to Step 2.



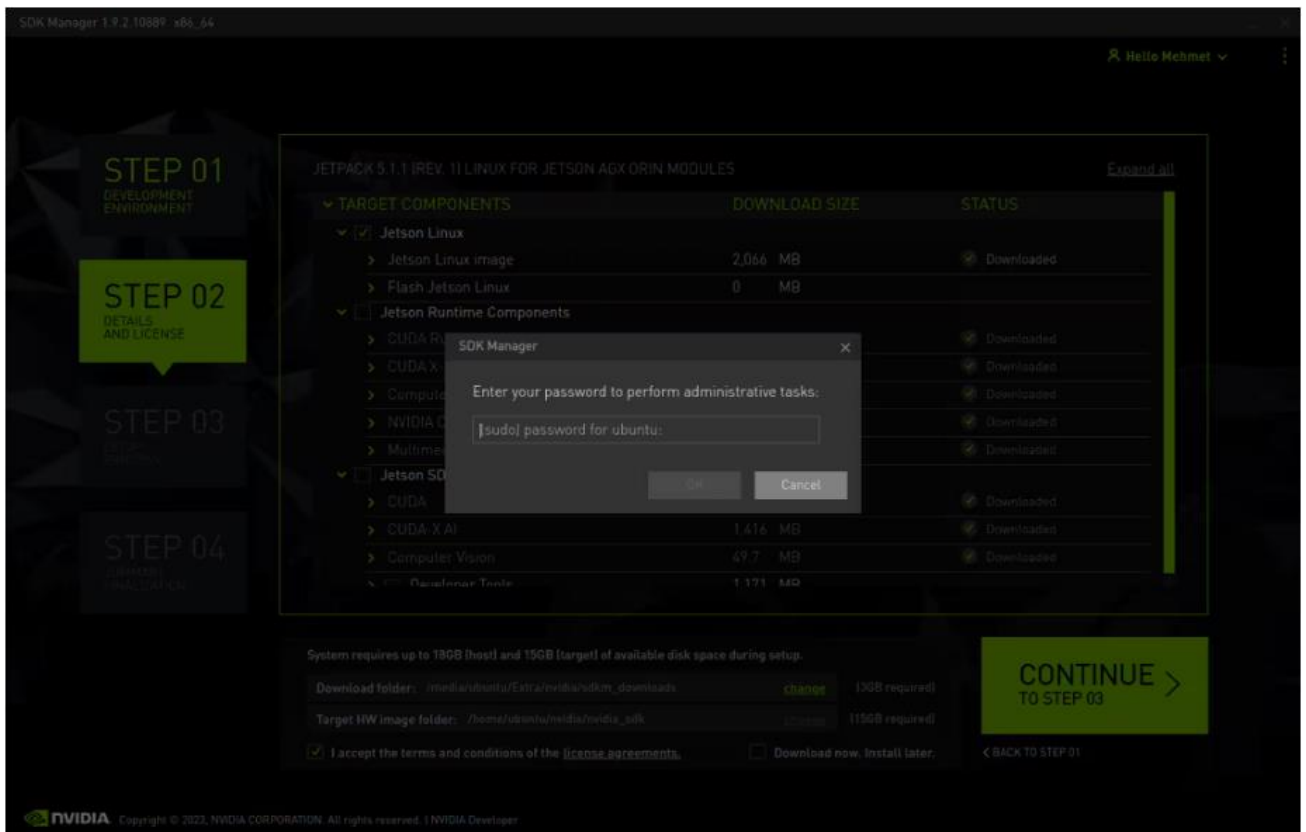
Choose only “Jetson Linux”, accept the terms & conditions and continue to Step 3.

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024



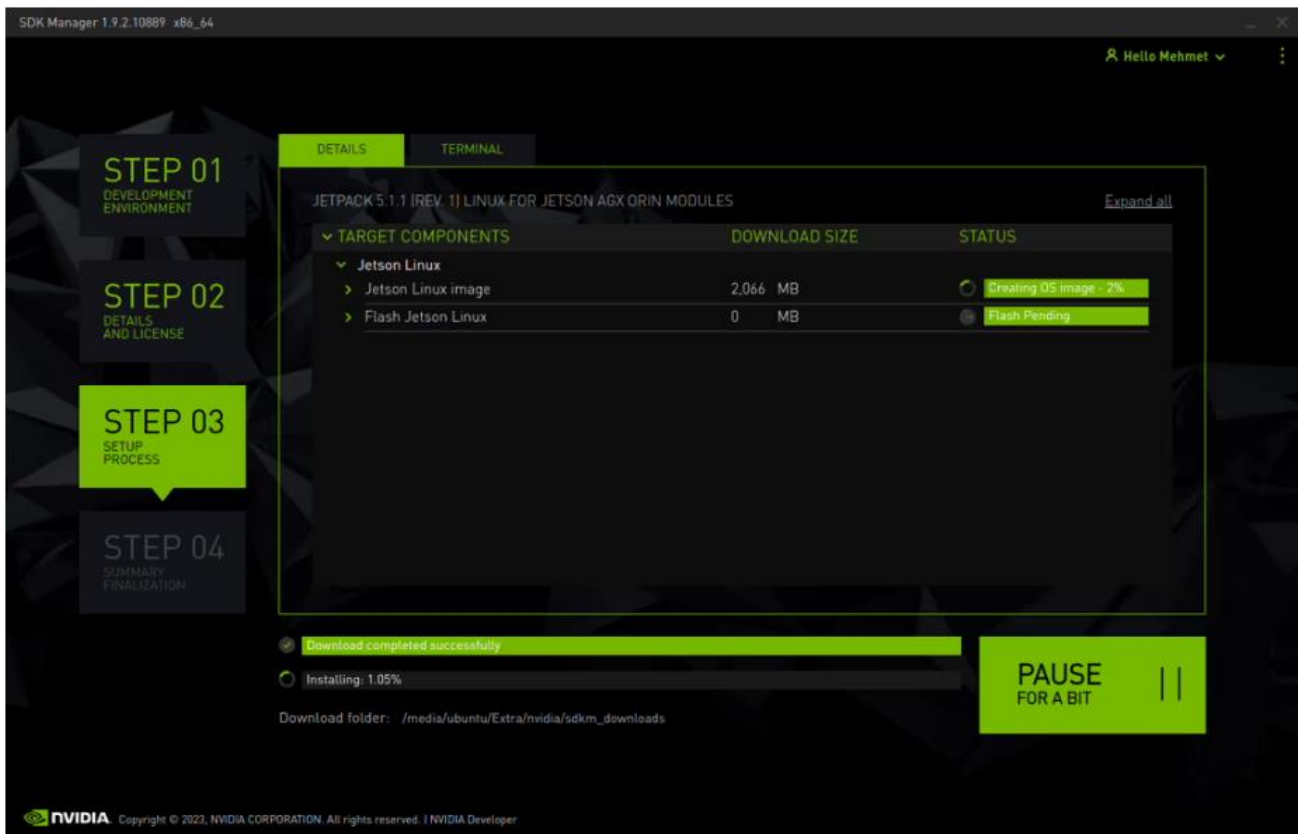
The SDK Manager will ask the username's password. Fill it and continue.



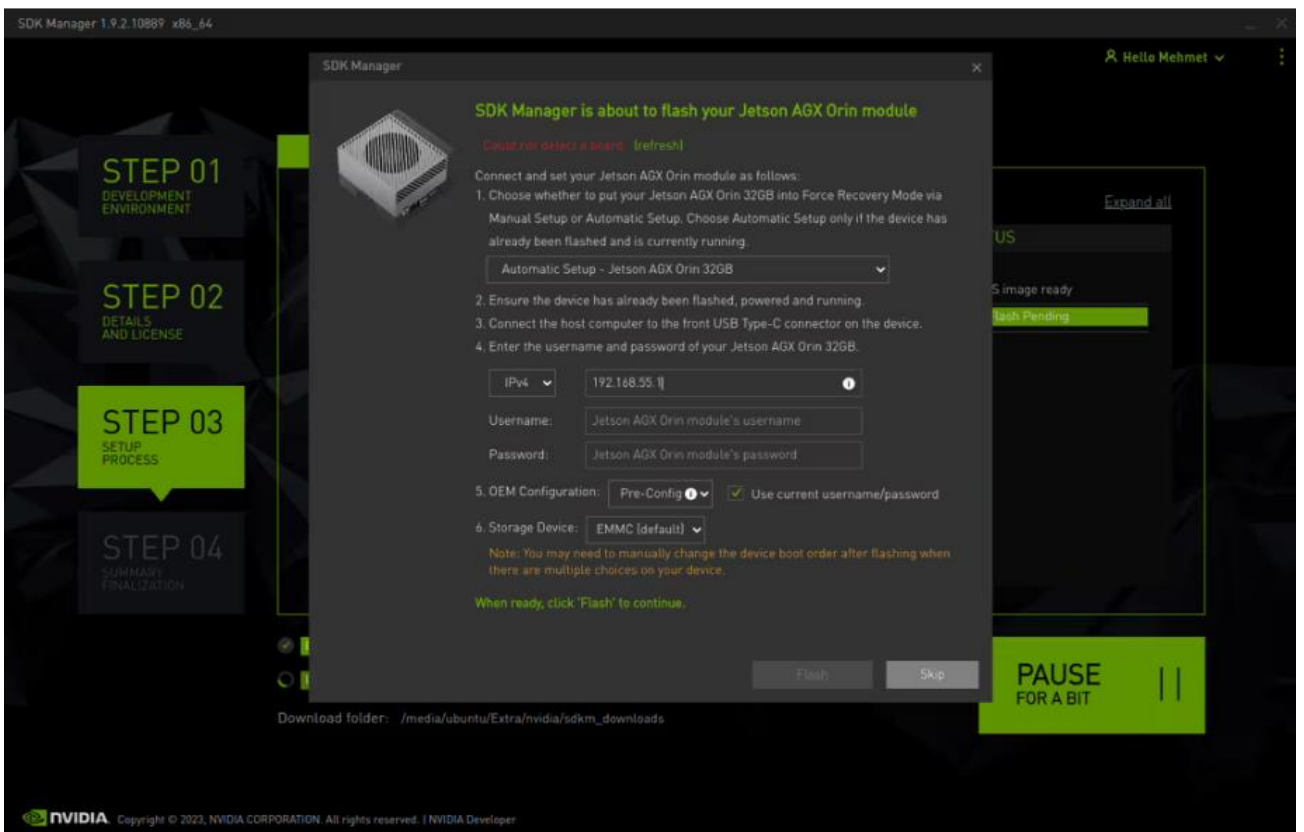
A few seconds later...

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

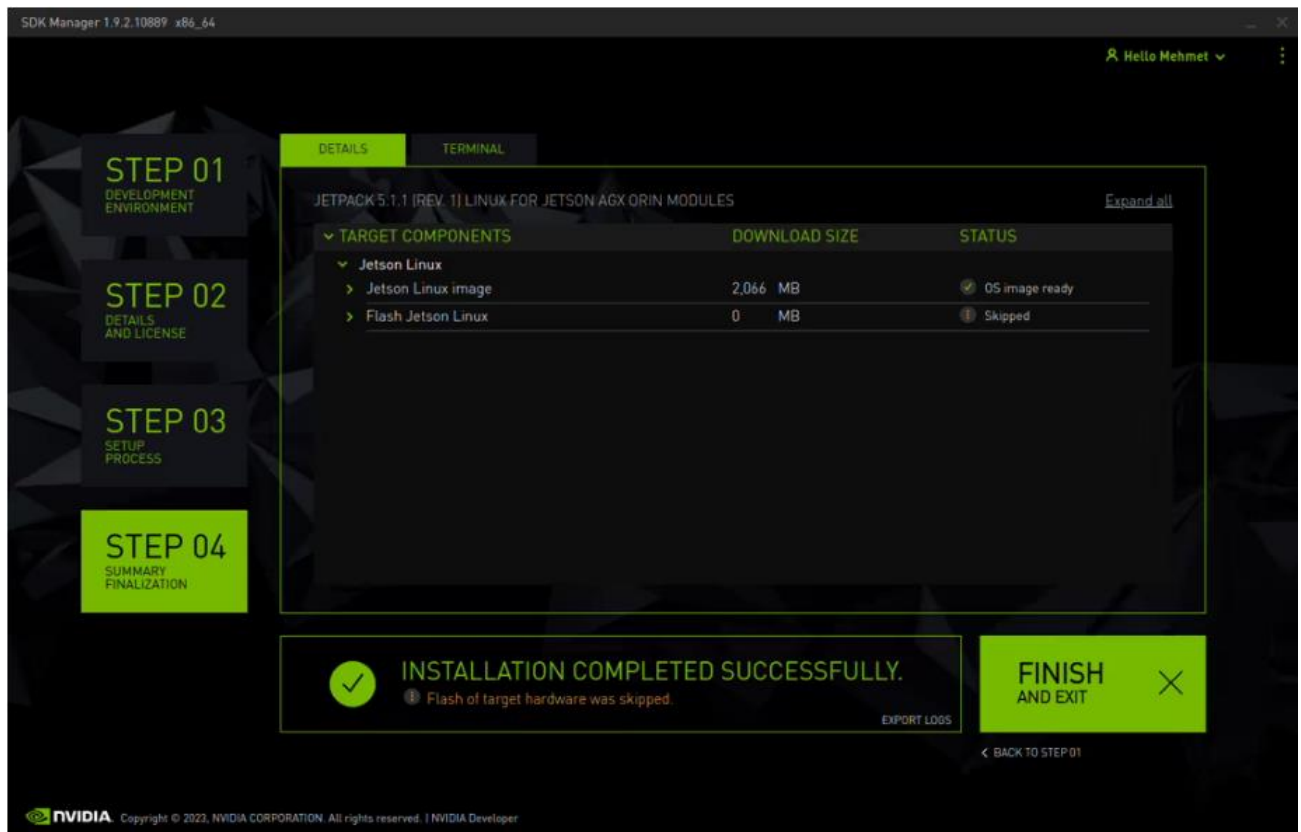


After the Jetson OS has created, the SDK Manager asks the Jetson module's flashing style. Just skip it and exit from the SDK Manager.



AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024



Open the target HW image folder.

For JetPack-5.0.2

AGX Orin: `~/nvidia/nvidia_sdk/JetPack_5.0.2_Linux_JETSON_AGX_ORIN_TARGETS/`

For JetPack-5.1

AGX Orin: `~/nvidia/nvidia_sdk/JetPack_5.1_Linux_JETSON_AGX_ORIN_TARGETS/`

For JetPack-5.1.1

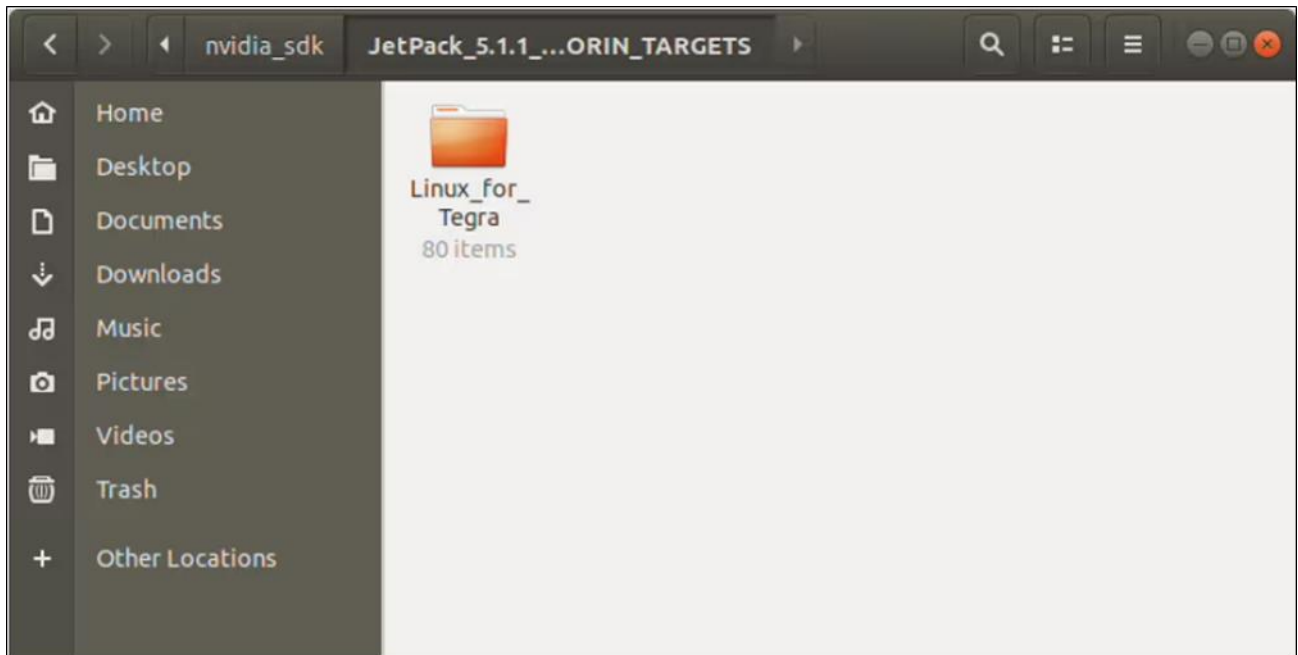
AGX Orin: `~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TARGETS/`

For JetPack-5.1.2

AGX Orin or AGX Orin Industrial: `~/nvidia/nvidia_sdk/JetPack_5.1.2_Linux_JETSON_AGX_ORIN_TARGETS/`

For JetPack-5.1.3

AGX Orin or AGX Orin Industrial: `~/nvidia/nvidia_sdk/JetPack_5.1.3_Linux_JETSON_AGX_ORIN_TARGETS/`



For JetPack-5.0.2:

Download the BSP files from GitHub link and extract it (AGX Orin)

For JetPack-5.1:

Download the BSP files from GitHub link and extract it (AGX Orin)

For JetPack-5.1.1:

Download the BSP files from GitHub link and extract it (AGX Orin)

For JetPack-5.1.2:

Download the BSP files from GitHub link and extract it (AGX Orin, AGX Orin Industrial)

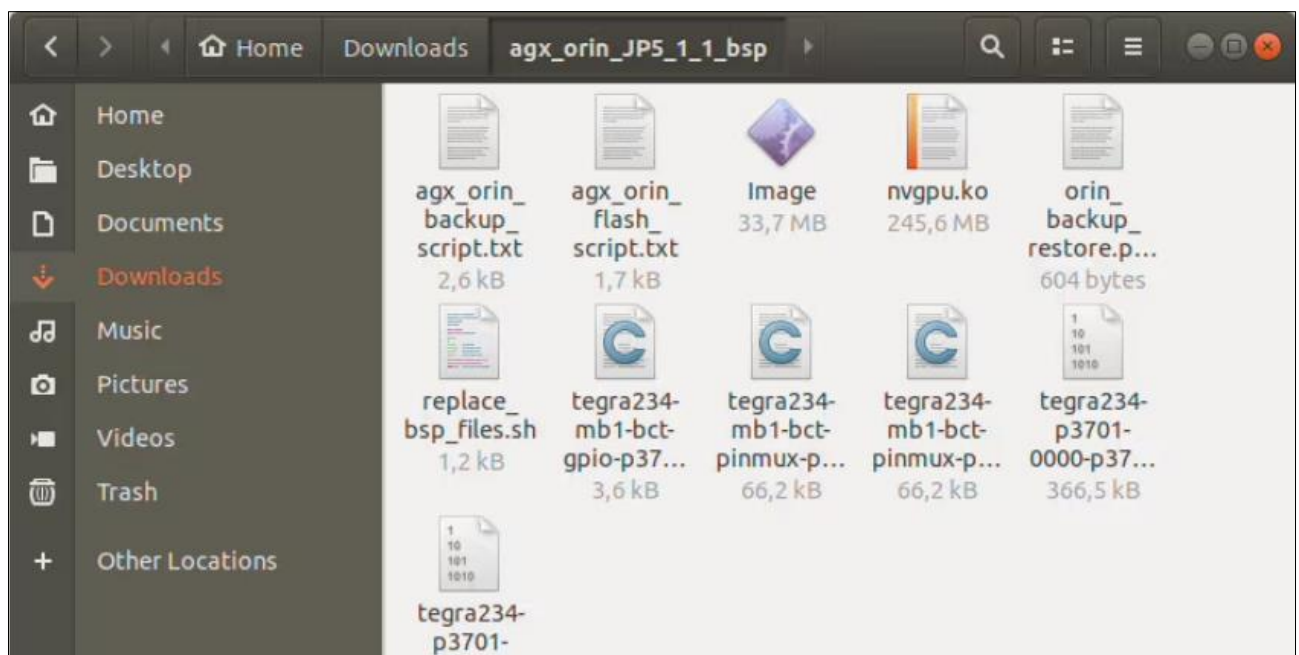
For JetPack-5.1.3:

Download the BSP files from GitHub link and extract it (AGX Orin, AGX Orin Industrial)

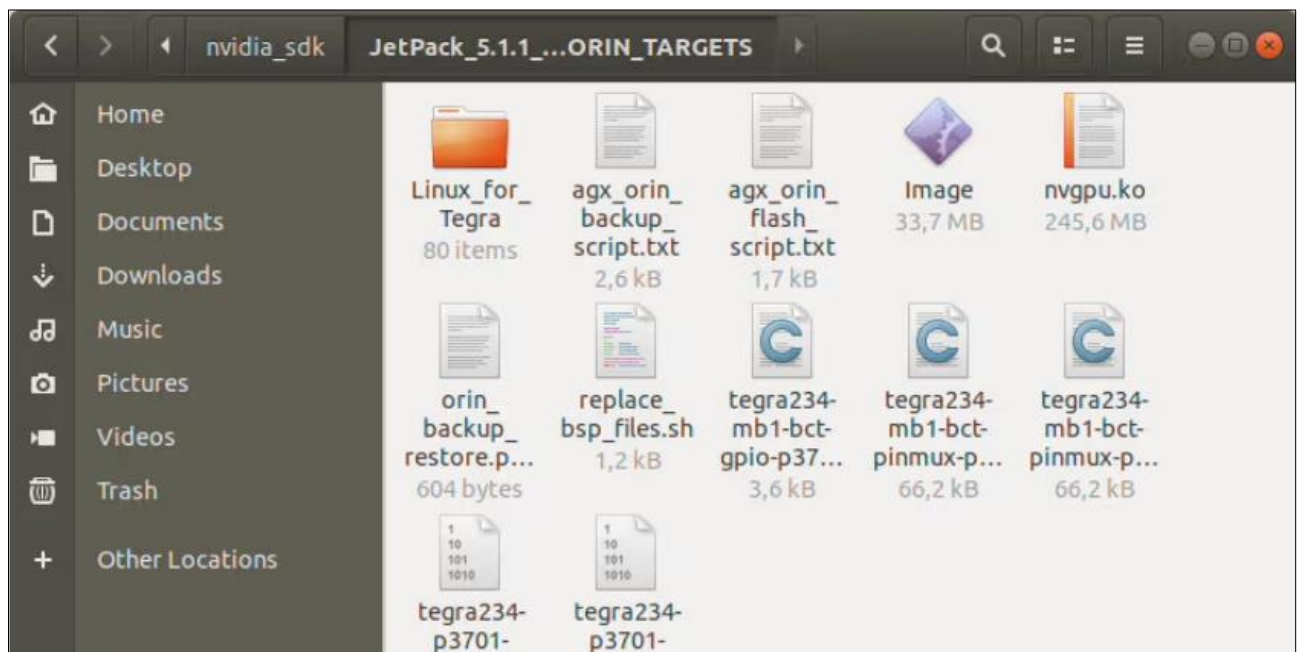
Hint: The following steps have done for AGX Orin, but they are the same for the other Jetson module types (only the BSP files and flashing commands are different).

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024



Copy all files from the extracted folder to the target HW image folder.



Open a terminal from the "Linux_for_Tegra" folder and create the system binaries with these commands below:

```
sudo ./tools/l4t_flash_prerequisites.sh
sudo ./apply_binaries.sh
```

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA...
File Edit View Search Terminal Help
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS/Linux_for_Tegra$ sudo ./tools/l4t_flash_prerequisites.sh
```

```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA...
File Edit View Search Terminal Help
libcommons-parent-java libconfuse-common libconfuse2 libe-book-0.1-1
libel-api-java libeot0 libepubgen-0.1-1 libetonyek-0.1-1 libexttextcat-2.0-0
libexttextcat-data libfreehand-0.1-1 libgpgmepp6 libgtkmm-3.0-1v5
libhsqldb1.8.0-java libjsp-api-java liblangtag-common liblangtag1 libmhash2
libmng2 libmispub-0.1-1 libmwaw-0.3-3 libmythes-1.2-0 libneon27-gnutls
libodfgen-0.1-1 liborcus-0.13-0 libpagemaker-0.0-0 libqt4-dbus
libqt4-declarative libqt4-network libqt4-script libqt4-sql libqt4-sql-mysql
libqt4-xml libqt4-xmlpatterns libqtcore4 libqtdbus4 libqtgui4 libraptor2-0
librasqal3 librdf0 librevenge-0.0-0 libservlet-api-java libservlet3.1-java
libsuitesparseconfig5 libvisio-0.1-1 libwebsocket-api-java libwpd-0.10-10
libwpg-0.3-3 libwps-0.4-4 libxmlsec1 libxmlsec1-nss
linux-headers-5.4.0-135-generic linux-hwe-5.4-headers-5.4.0-100
linux-hwe-5.4-headers-5.4.0-107 linux-hwe-5.4-headers-5.4.0-109
linux-hwe-5.4-headers-5.4.0-124 linux-hwe-5.4-headers-5.4.0-135
linux-hwe-5.4-headers-5.4.0-84 linux-image-5.4.0-135-generic
linux-modules-5.4.0-135-generic linux-modules-extra-5.4.0-135-generic
linux-objects-nvidia-510-5.4.0-100-generic
linux-objects-nvidia-510-5.4.0-105-generic lp-solve qdbus qt-at-spi
qtchooser qtcore4-l10n smartmontools suckless-tools unetbootin-translations
uno-libs3 ure
Use 'sudo apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 35 not upgraded.
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS/Linux_for_Tegra$ sudo ./apply_binaries.sh
```

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA...
File Edit View Search Terminal Help
Setting up nvidia-l4t-3d-core (35.3.1-20230319081403) ...
Setting up nvidia-l4t-gbm (35.3.1-20230319081403) ...
Setting up nvidia-l4t-initrd (35.3.1-20230319081403) ...
Pre-installing initrd package, skip flashing
Setting up nvidia-l4t-jetson-io (35.3.1-20230319081403) ...
Setting up nvidia-l4t-multimedia (35.3.1-20230319081403) ...
Setting up nvidia-l4t-vulkan-sc-samples (35.3.1-20230319081403) ...
Setting up nvidia-l4t-weston (35.3.1-20230319081403) ...
Setting up nvidia-l4t-display-kernel (5.10.104-tegra-35.3.1-20230319081403) ...
Setting up nvidia-l4t-camera (35.3.1-20230319081403) ...
Setting up nvidia-l4t-graphics-demos (35.3.1-20230319081403) ...
Setting up nvidia-l4t-gstreamer (35.3.1-20230319081403) ...
Processing triggers for nvidia-l4t-kernel (5.10.104-tegra-35.3.1-20230319081403)
...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TARGETS/Linux_for_Tegra
Removing QEMU binary from rootfs
Removing stashed Debian packages from rootfs
L4T BSP package installation completed!
Disabling NetworkManager-wait-online.service
Disable the ondemand service by changing the runlevels to 'K'
Success!
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS/Linux_for_Tegra$
```

Apply the interface configurations with the following commands below:

```
cd ..
sudo ./replace_bsp_files.sh
cd Linux_for_Tegra/
```

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA...
File Edit View Search Terminal Help
Setting up nvidia-l4t-weston (35.3.1-20230319081403) ...
Setting up nvidia-l4t-display-kernel (5.10.104-tegra-35.3.1-20230319081403) ...
Setting up nvidia-l4t-camera (35.3.1-20230319081403) ...
Setting up nvidia-l4t-graphics-demos (35.3.1-20230319081403) ...
Setting up nvidia-l4t-gstreamer (35.3.1-20230319081403) ...
Processing triggers for nvidia-l4t-kernel (5.10.104-tegra-35.3.1-20230319081403)
...
Processing triggers for libc-bin (2.31-0ubuntu9.9) ...
~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TARGETS/Linux_for_Tegra
Removing QEMU binary from rootfs
Removing stashed Debian packages from rootfs
L4T BSP package installation completed!
Disabling NetworkManager-wait-online.service
Disable the ondemand service by changing the runlevels to 'K'
Success!
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS/Linux_for_Tegra$ cd ..
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS$ sudo ./replace_bsp_files.sh
Done.
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS$ cd Linux_for_Tegra/
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS/Linux_for_Tegra$
```

Hint: If you want to configure your username-password & hostname with default settings, you can create user without the Ubuntu installation wizard. To do this, the user generation command structure should be:

```
sudo tools/l4t_create_default_user.sh -u {USERNAME} -p {PASSWORD} -a -n {HOSTNAME} --accept-license
```

For example (username:"nvidia", password:"nvidia", device-name:"nvidia-agx-orin"):

```
sudo tools/l4t_create_default_user.sh -u nvidia -p nvidia -a -n nvidia-agx-orin --accept-license
```

Jetson OS Installation

Connect the recovery USB (between installer PC & AV710-X4-32G4S's recovery USB) and power connection of your AV710-X4-32G4S.

While the AV710-X4-32G4S's power connector plugged in,

- press reset & recovery buttons together
- release reset button
- release the recovery button after 3 seconds later.

This will set it to Recovery mode.

Then, type "lsusb" and check the device connected in Recovery mode.

- "0955:7023 NVidia Corp." for AGX Orin 64GB
- "0955:7223 NVidia Corp." for AGX Orin 32GB

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

- "0955:7023 NVidia Corp." for AGX Orin Industrial

```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA...
File Edit View Search Terminal Help
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS/Linux_for_Tegra$ lsusb
Bus 008 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 007 Device 003: ID 046d:0a8f Logitech, Inc.
Bus 007 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 006 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 005 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 003: ID 0b05:18f3 ASUSTek Computer, Inc.
Bus 003 Device 011: ID 03f0:134a Hewlett-Packard Optical Mouse
Bus 003 Device 010: ID 1c4f:0026 SiGma Micro Keyboard
Bus 003 Device 009: ID 0409:005a NEC Corp. HighSpeed Hub
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 003: ID 8087:0029 Intel Corp.
Bus 001 Device 002: ID 05e3:0610 Genesys Logic, Inc. 4-port hub
Bus 001 Device 005: ID 0955:7023 NVidia Corp.
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS/Linux_for_Tegra$
```

For AGX Orin, flash the Jetson OS with this script below:

```
sudo ./flash.sh jetson-agx-orin-devkit mmcblk0p1
```

For AGX Orin Industrial, flash the Jetson OS with this script below:

```
sudo ./flash.sh jetson-agx-orin-devkit-industrial mmcblk0p1
```

```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA...
File Edit View Search Terminal Help
ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS/Linux_for_Tegra$ sudo ./flash.sh jetson-agx-orin-devkit mmcblk0p1
```

A few minutes later ...

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA...
File Edit View Search Terminal Help
[ 416.8732 ] [.....] 100%
[ 416.8795 ] Writing partition A_VER with qspi_bootblob_ver.txt [ 108 bytes ]
[ 416.8886 ] [.....] 100%
[ 416.8917 ] Writing partition master_boot_record with mbr_1_3.bin [ 512 bytes ]
[ 416.9008 ] [.....] 100%
[ 416.9037 ] Writing partition A_kernel with boot.img [ 43067392 bytes ]
[ 416.9093 ] [.....] 100%
[ 418.2438 ] Writing partition A_kernel-dtb with kernel_tegra234-p3701-0000-p373
7-0000.dtb [ 343775 bytes ]
[ 418.2457 ] [.....] 100%
[ 418.2579 ] Writing partition B_kernel with boot.img [ 43067392 bytes ]
[ 418.2615 ] [.....] 100%
[ 419.5807 ] Writing partition B_kernel-dtb with kernel_tegra234-p3701-0000-p373
7-0000.dtb [ 343775 bytes ]
[ 419.5828 ] [.....] 100%
[ 419.5950 ] Writing partition recovery with recovery.img [ 46723072 bytes ]
[ 419.5994 ] [.....] 100%
[ 421.0270 ] Writing partition recovery-dtb with tegra234-p3701-0000-p3737-0000.
dtb.rec [ 343775 bytes ]
[ 421.0311 ] [.....] 100%
[ 421.0437 ] Writing partition esp with esp.img [ 67108864 bytes ]
[ 421.0472 ] [.....] 100%
[ 423.0861 ] Writing partition APP with system.img [ 5974762876 bytes ]
[ 423.0916 ] [.....] 003%
```

At the end of the script, the device will reboot. Complete your Ubuntu installation wizard (if you have not created a user with tools/l4t_create_default_user.sh script file) from the AV710-X4-A (32G4S) (language, keyboard type, location, username & password etc.).

```
ubuntu@ubuntu-desktop: ~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA...
File Edit View Search Terminal Help
pt
[ 625.6922 ] Bootloader version 01.00.0000
[ 626.1584 ] Writing partition A_MEM_BCT with mem_coldboot_sigheader.bct.encrypt
[ 243712 bytes ]
[ 626.1588 ] [.....] 100%
[ 629.1610 ] tegradevflash_v2 --write B_MEM_BCT mem_coldboot_sigheader.bct.encrypt
pt
[ 629.1624 ] Bootloader version 01.00.0000
[ 629.6343 ] Writing partition B_MEM_BCT with mem_coldboot_sigheader.bct.encrypt
[ 243712 bytes ]
[ 629.6347 ] [.....] 100%
[ 632.6356 ] Flashing completed

[ 632.6356 ] Coldbooting the device
[ 632.6369 ] tegrarcv2 --chip 0x23 0 --ismb2
[ 632.6381 ] MB2 version 01.00.0000
[ 633.1064 ] Coldbooting the device
[ 633.1079 ] tegrarcv2 --chip 0x23 0 --reboot coldboot
[ 633.1092 ] MB2 version 01.00.0000
*** The target t186ref has been flashed successfully. ***
Reset the board to boot from internal eMMC.

ubuntu@ubuntu-desktop:~/nvidia/nvidia_sdk/JetPack_5.1.1_Linux_JETSON_AGX_ORIN_TA
RGETS/Linux_for_Tegra$
```

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

Jetson SDK Components Installation

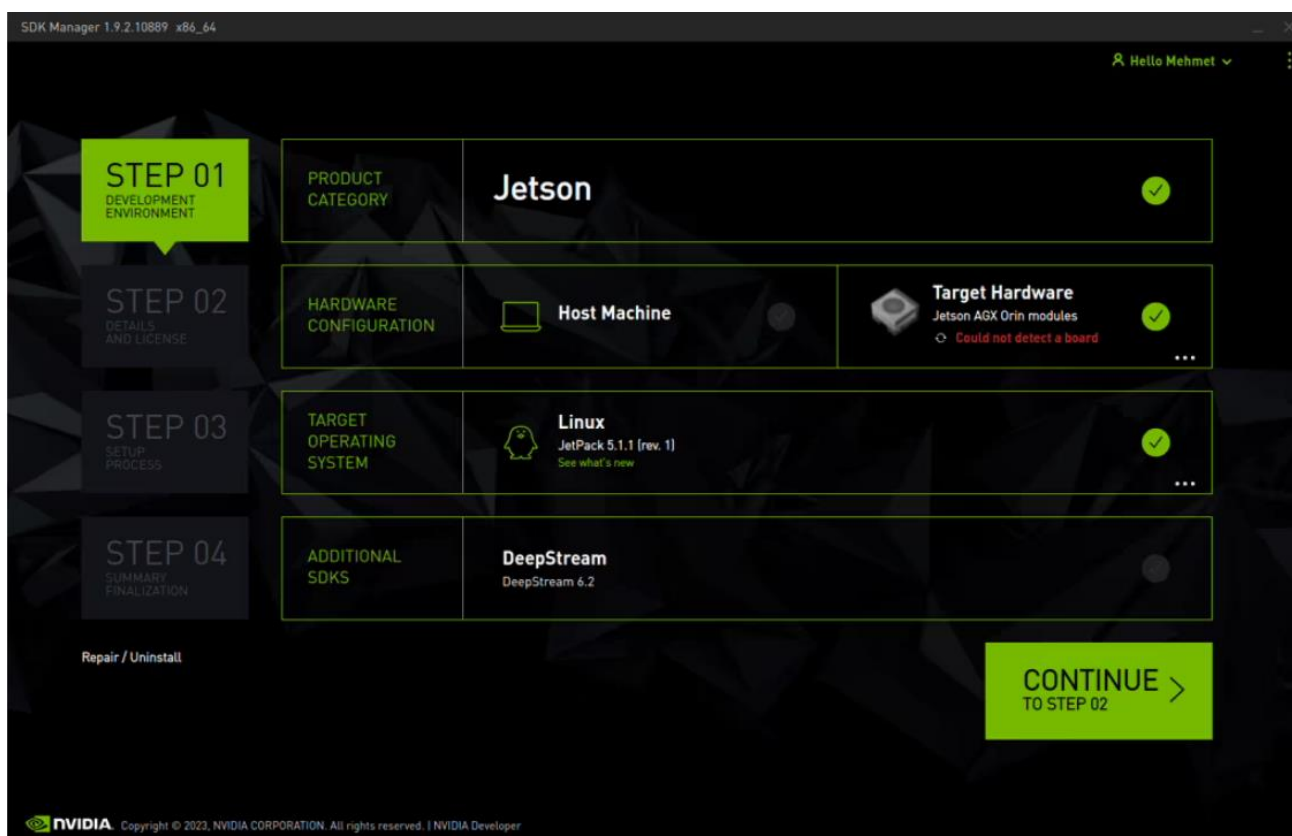
[Optional] Delete LibreOffice & ThunderBird packages (if you don't need) and remove the unnecessary packages to increase the free space. To do this, type these commands to the AV710-X4-A (32G4S) side:

```
sudo apt remove -y libreoffice* thunderbird*
sudo apt autoremove -y
sudo apt clean
```

Connect the AV710-X4-32G4S to the Internet.

Open the NVIDIA SDK Manager. Select the correct JetPack version for Target Operating System and "Jetson AGX Orin modules" for Target Hardware (The "Host Machine" components are not required. Additional SDKs (DeepStream) are optional).

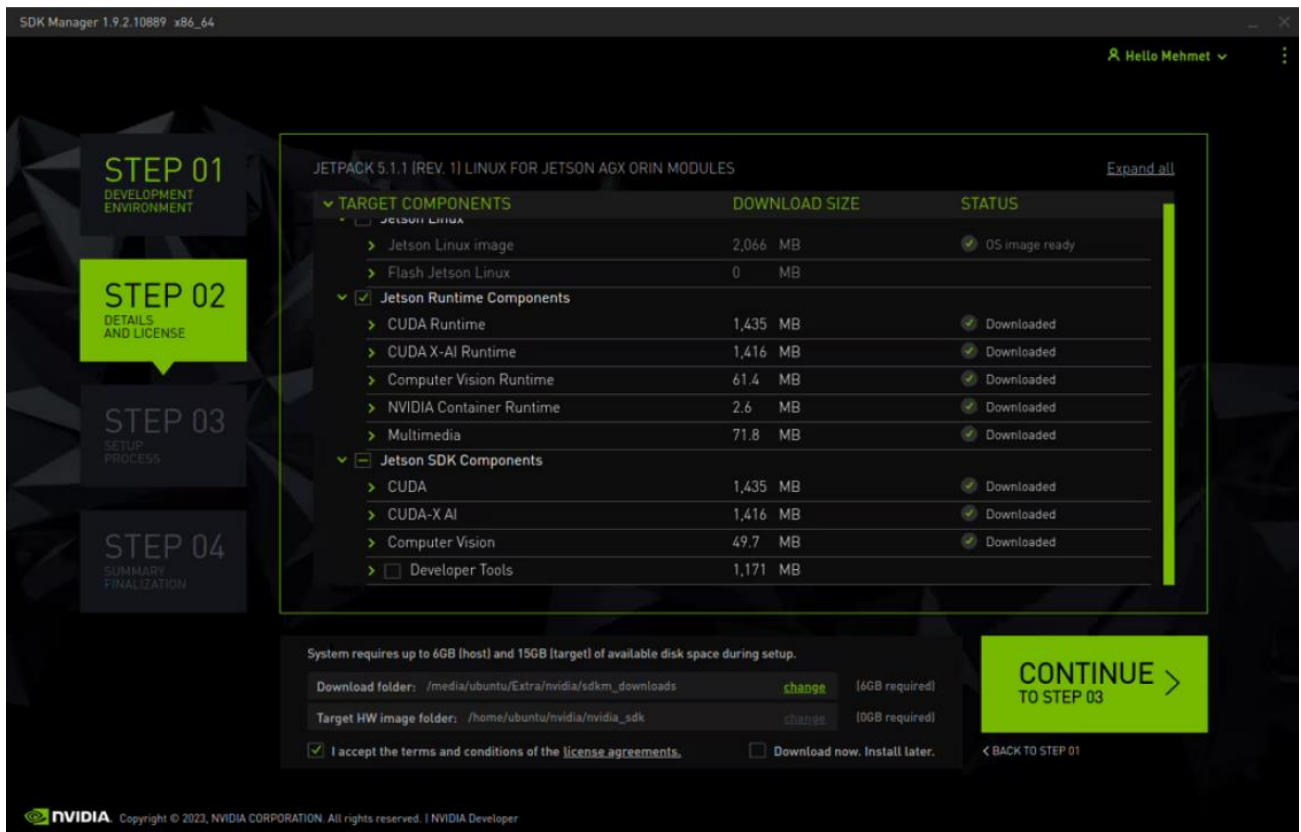
Then, continue to Step 2.



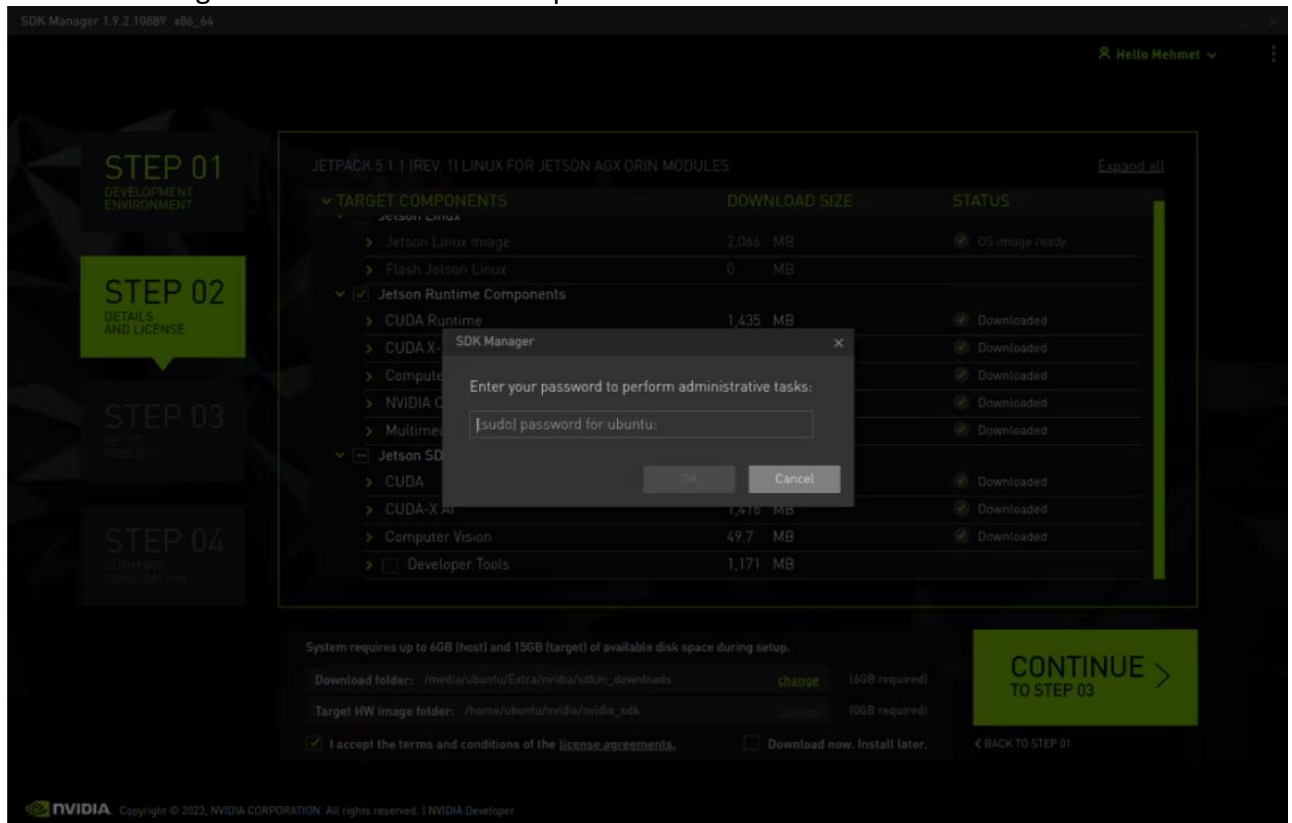
Unselect the "Jetson Linux" and choose "Jetson Runtime Components" ("Jetson SDK Components" are optional. It depends on your use case). Accept the terms & conditions and continue to Step 3.

AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024



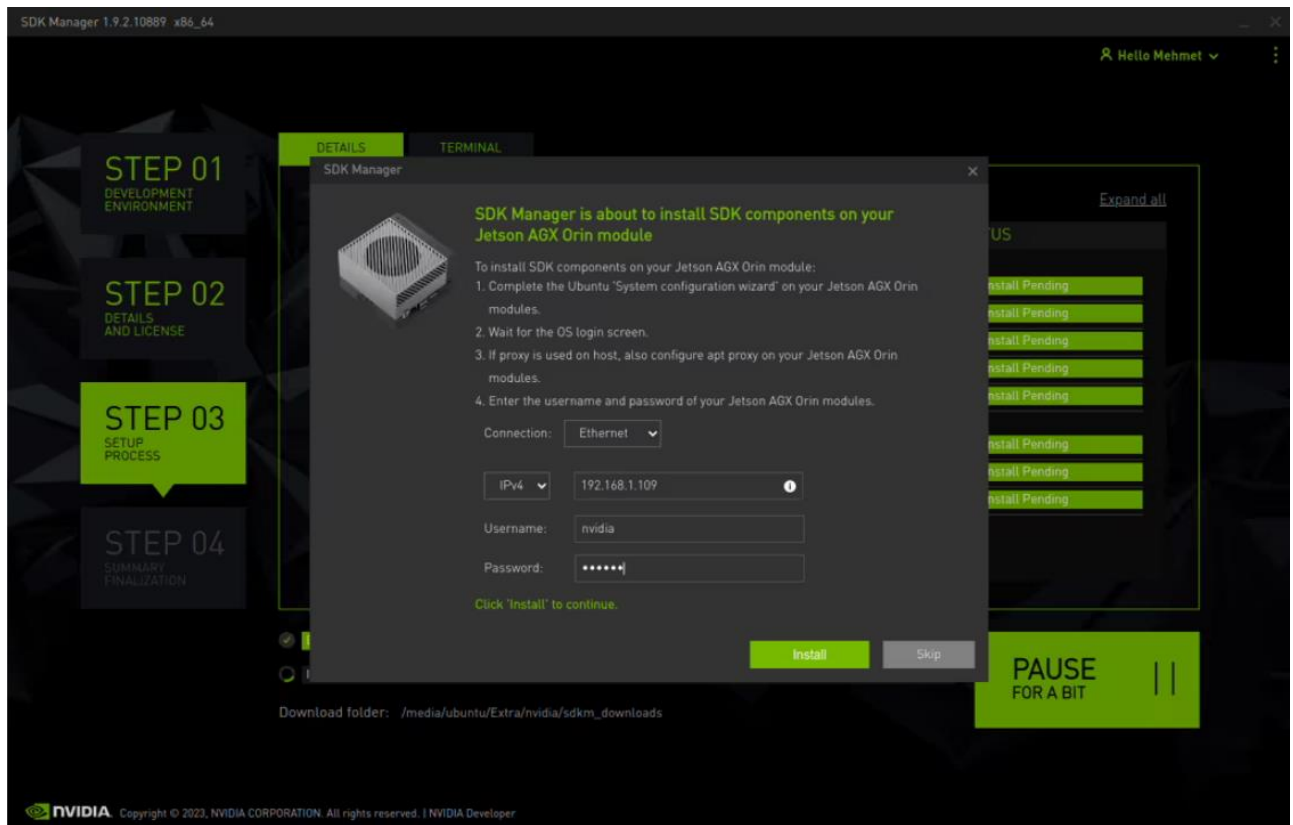
The SDK Manager will ask the username's password. Fill it and continue.



Type the IP address, username and password of Jetson AGX Orin module and install the SDK Components.

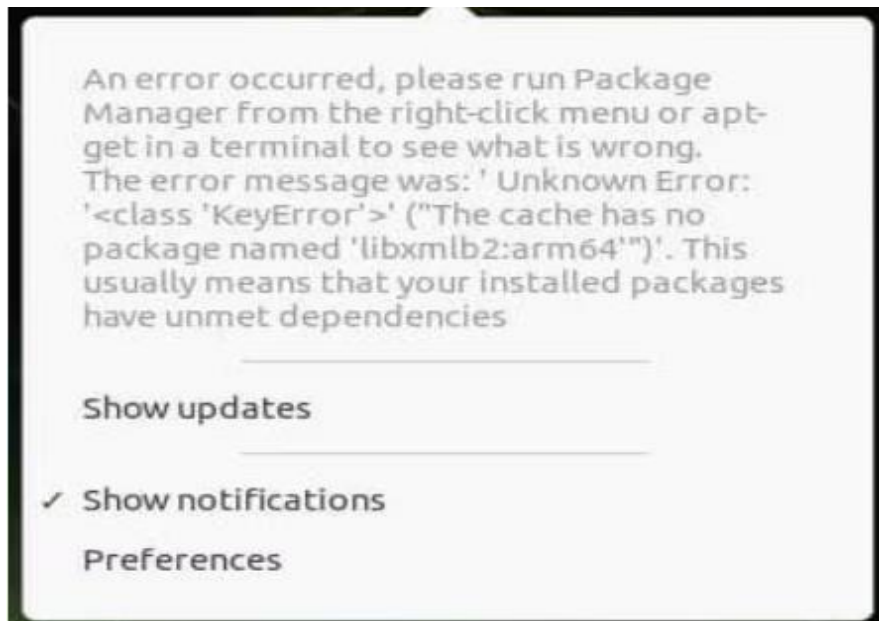
AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024



At the end of the installation, the AV710-X4-A (32G4S) sdkmanager_2.1.0 becomes ready. To avoid kernel update with "apt upgrade" or "apt-get upgrade" commands, please follow this guide on the Jetson module.

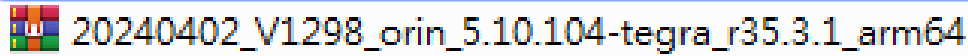
Attention: If you will have unmet dependencies after the SDK components installed, please open a terminal from the Jetson side and type the following command below. This will fix the problem.



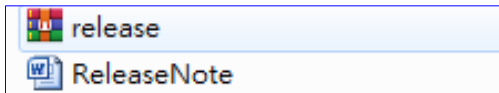
```
sudo apt install -y libxmlb2 ubuntu-advantage-desktop-daemon libfwupdplugin5 libpciaccess-dev
```

3-3 Install the driver for Capture Card

Unzip the driver file in the DVD.



Unzip the “Release” file for Inserting Driver and Firmware. You may refer the ReleaseNote.doc or follow the step below. For more operation about the media devices (for example: camera) setting, you may refer the releaseNote.doc.



The “release” file includes:

- 1.1 ReleaseNote.docx
- 1.2 release.zip: Files for Orin, Xavier, and Xavier NX. It includes
 - 1.2.1 Yuan’s Driver: driver/LXV4L2D_SC0710.ko (Release version)
driver/debug/ LXV42D_SC0710.ko(debug version)
 - 1.2.2 V4L Drivers: driver/V4L/videobuf*.ko
- 1.3 Firmware of Capture card: files in firmware folder
- 1.4 Scripts file: *.sh
- 1.5 The release is based on Nvidia R35.3.1
<https://developer.nvidia.com/embedded/jetson-linux-r3531>
- 1.6 Driver version is V1.1.0.120.1298_VB2
- 1.7 Supported capture cards: SC3x0/ SC4x0/SC5x0/SC7x0/
- 1.8 Supported Platform: Orin, Xavier, Orin NX,Xavier NX

Insert Driver and firmware

- 1 Power off the Jetson device, and plugin Yuan’s capture card.(Default)
- 2 Power on the Jetson device.
- 3 Copy the release.zip to home directory(/home/nvidia), and open the terminal.
- 4 Unzip the zip file
 - 4.1 `$ cd ~` (change to home directory -/home/nvidia)
 - 4.2 `$ sudo su` (switch to root – enter password “nvidia”)
 - 4.3 `# unzip release.zip`
 - 4.4 `# cd release` (enter release folder)
- 5 Set execution permission for scripts
 - 5.1 `# chmod +x *.sh`
- 6 Execute the setup.sh script to install driver. (dsetup.sh for debug version, nsetup.sh for no debug message)
 - 6.1 `# ./setup.sh`

7 The script file will do these procedures

- 7.1 Copy firmware files of capture card to /lib/firmware.
- 7.2 Copy V4L drivers to
/lib/modules/5.10.104-tegra/kernel/drivers/media/v4l2-core and
/lib/modules/5.10.104-tegra/kernel/drivers/media/common/videobuf2
- 7.3 Copy Yuan's driver to /lib/modules/5.10.104-tegra/misc
- 7.4 Install V4L and Yuan's drivers.

8 After installing Yuan's driver, driver will upgrade the firmware of capture card.

Please wait 60 seconds, and then reboot Xavier.

8.1 # **reboot**

9 Open the terminal, and change to root.

9.1 \$ **cd /home/nvidia/release**

9.2 \$ **sudo su**

10 Check if the video devices (video0 or video*) are created by driver.

10.1 # **ls /dev/video***

10.2 The result should be

/dev/video0

11 Make sure that you can connect to internet, and install the Qt V4L2 test Utility to verify the video input.

11.1 # **./install.sh**

12 Open "Terminal app", and enter the "v4l2-ctl --list-devices" to check if the video device has been created. (For example)

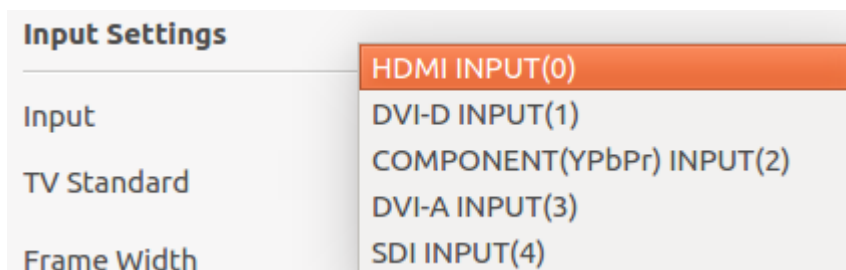
12.1 nvidia@tegra-ubuntu:~\$ **v4l2-ctl --list-devices**

12.2 SC3x0-TWxxxx:RAW 00.00 xxxxxxxx (PCIe: PCI Bus 0000:01 00):

SC5x0-MZxxxx:RAW 00.00 xxxxxxxx (PCIe: PCI Bus 0000:01 00):

SC710-SC710:RAW 00.00 xxxxxxxx (PCIe: PCI Bus 0000:01 00):

12.3 The index of video input, 0 for HDMI, and 4 for SDI.



13 If you want to remove the driver, execute remove_driver.sh, and reboot the device.

14 **Note: The commands in blue color which you need to execute in the terminal.**

Debug

1. Copy the new release “release.zip” to home directory
(For example /home/nvidia)
2. Unzip the zip file by command
`$ sudo su` (enter password, for example nvidia)
`# unzip release.zip`
3. Reinstall the debug driver
`# cd release`
`# ./dsetup.sh`
4. Power off Jetson device. **Remove other PCI devices**, for example “AverMedia CM313B” capture card.
5. Power on Jetson device, enter the debug directory which you unzip
(For example: `$ cd /home/nvidia/release/debug`)
6. Generate log_setup.txt by executing debug.sh, and send the log_setup.txt for analyzing
`# sudo ./debug.sh`

3-4 Change Root File System to M.2 SSD Directly

Formatting the M.2 SSD Storage

We will explain how to move your root file system on EMMC flash to SSD storage on M.2 slot directly. The previous version of this post is here:

<https://www.forecr.io/blogs/bsp-development/changing-storage-of-the-root-file-system-emmc-to-m-2-ssd>

The advantage of this version is the boot up speed. In the previous version, the file system into the SSD mounted with a service after the file system into the eMMC mounted. This process increases the boot up time. In this post, the file system into the SSD mounted directly without any service. On the other hand, the Jetson module won't boot up without SSD until the extlinux.conf file changed. To avoid this problem, you can backup your Jetson module before changing the root file system.

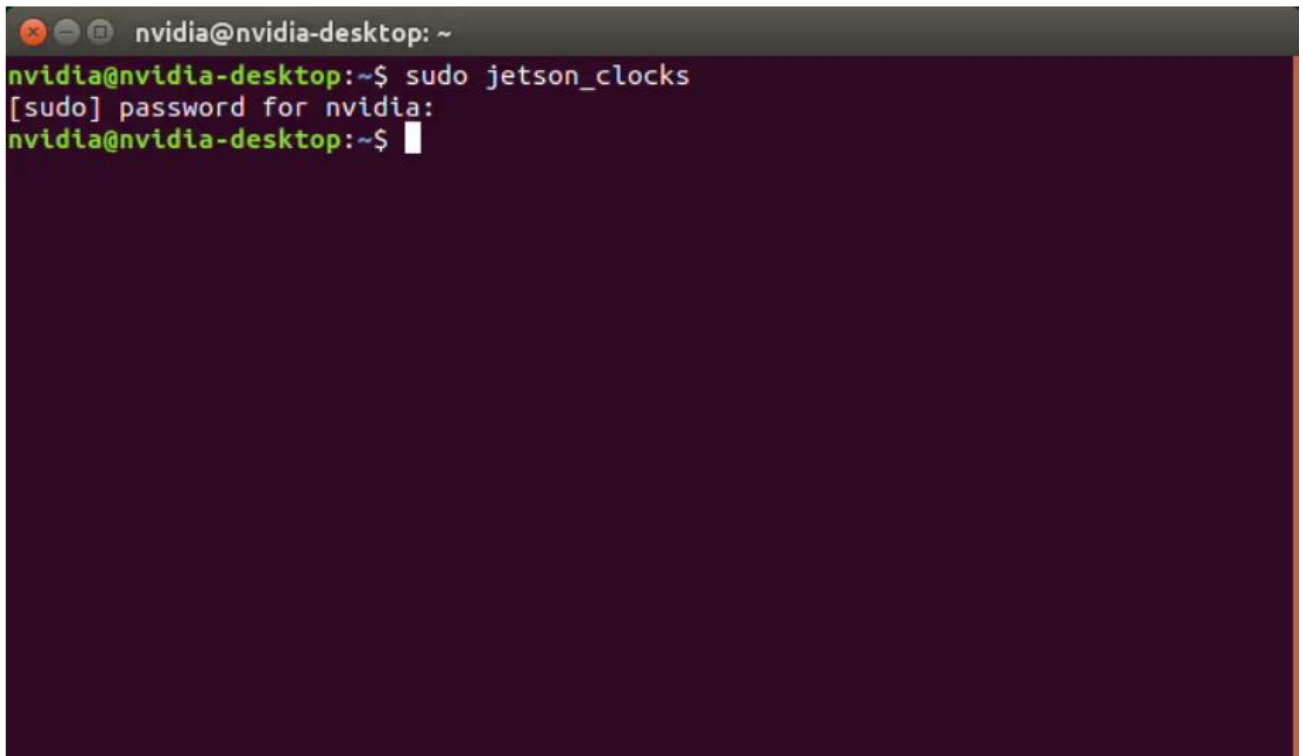
First, connect your M.2 compatible storage device to M.2 connector and connect the basic interfaces (Ethernet, HDMI, keyboard, mouse) then power on.

Open a terminal and type these commands below:

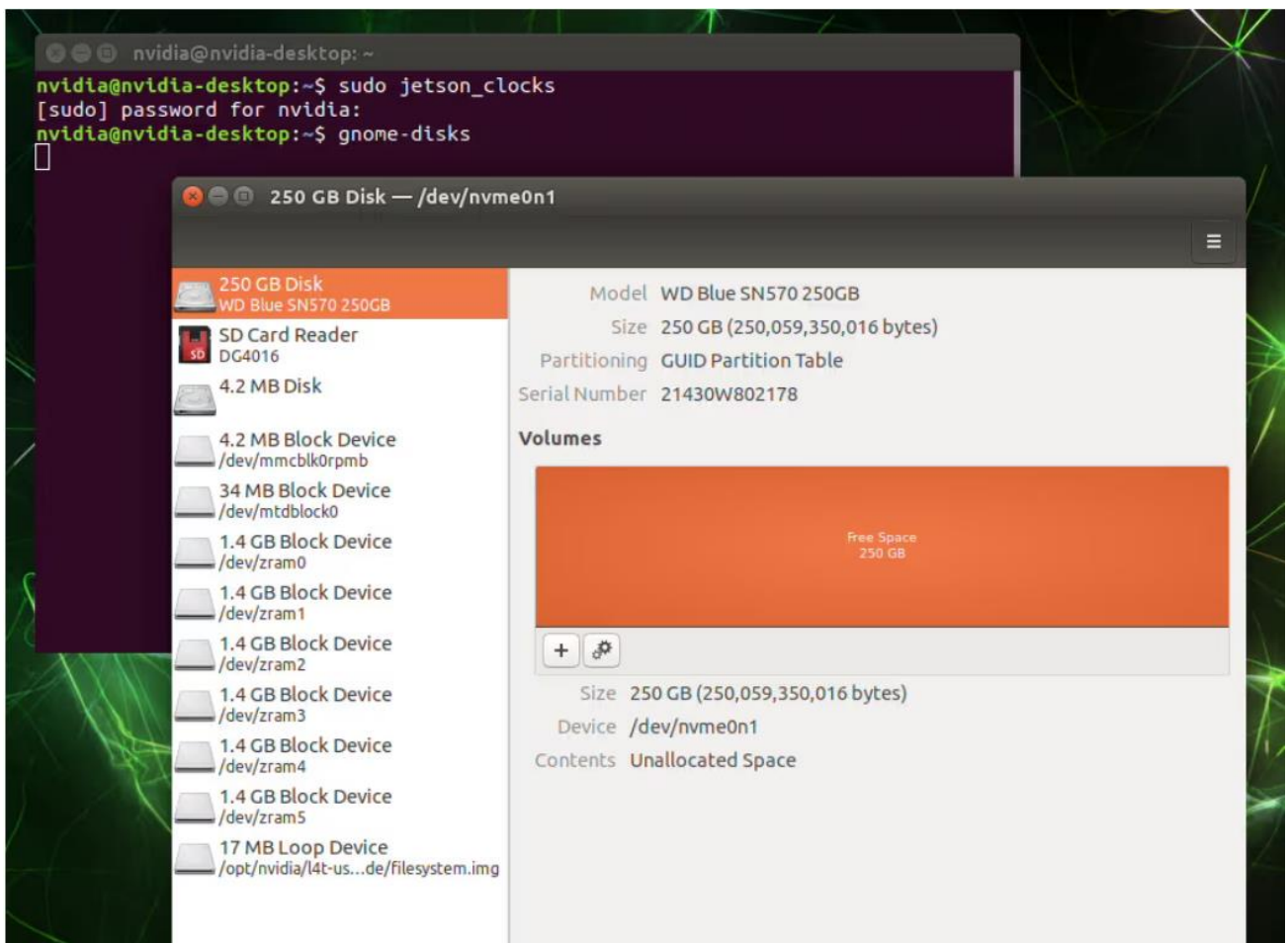
```
sudo jetson_clocks
gnome-disks
```


AV710-X4-A User's Manual

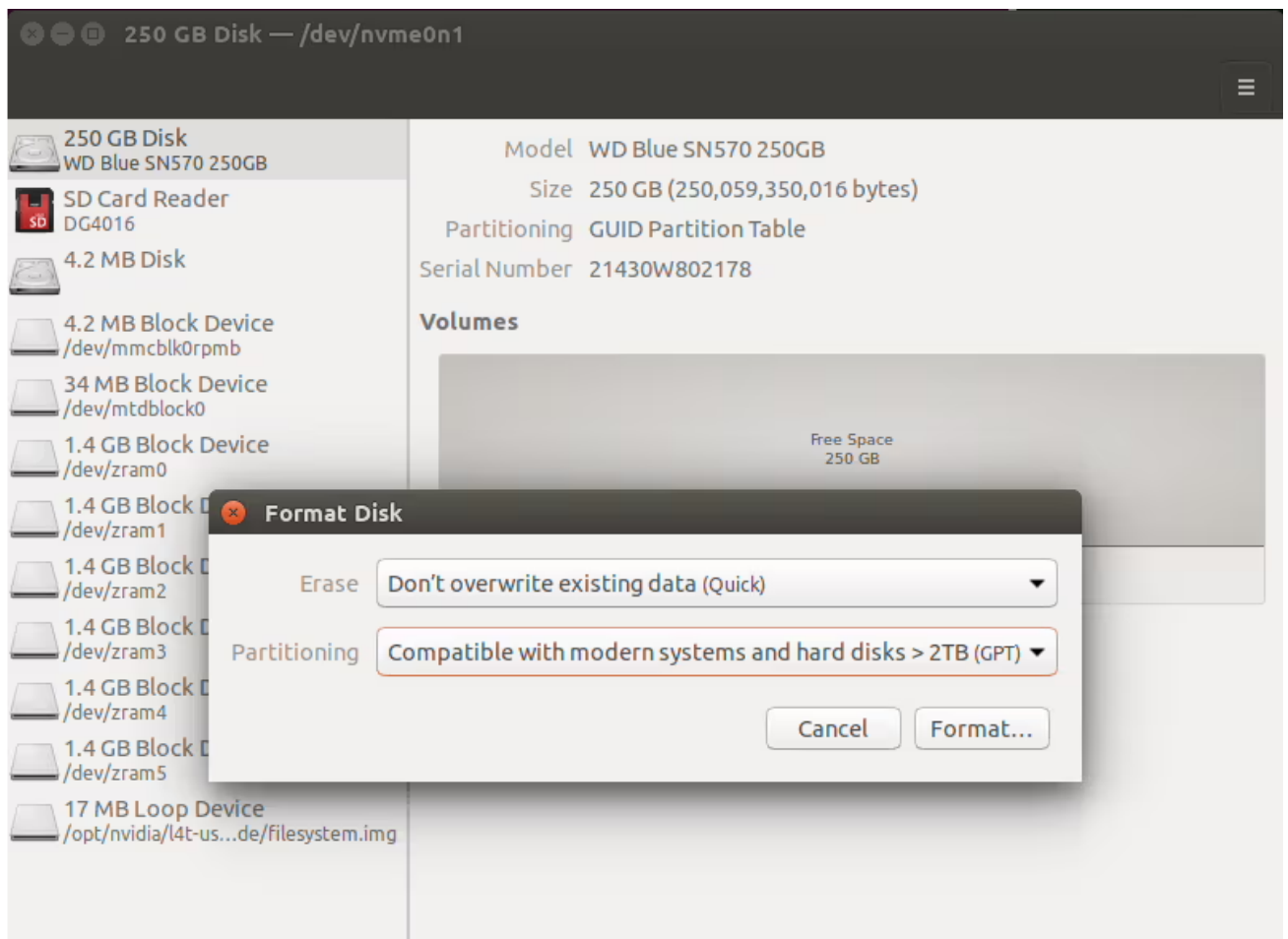
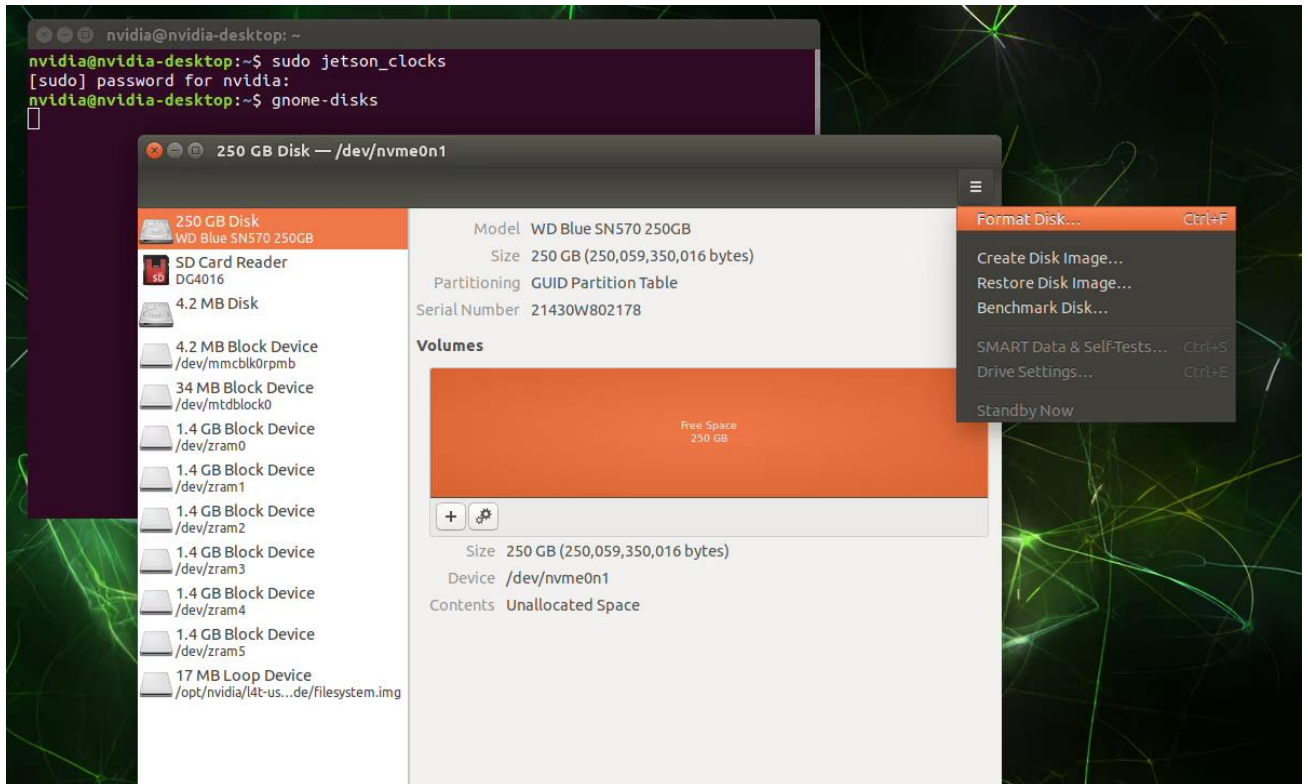
Revision Date: Jun. 06. 2024



The first command allows the Jetson module's whole sources to use. The next command opens GNOME Disks application below.

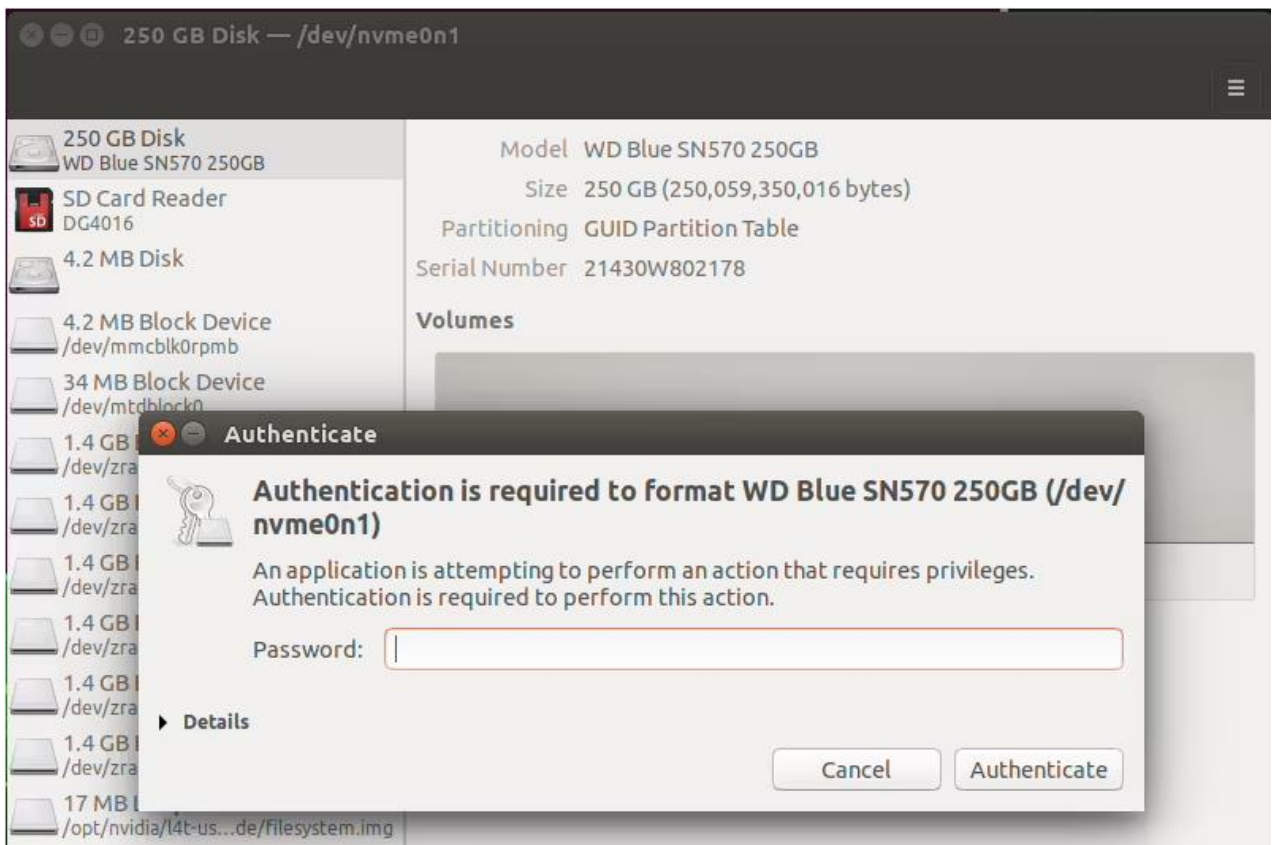
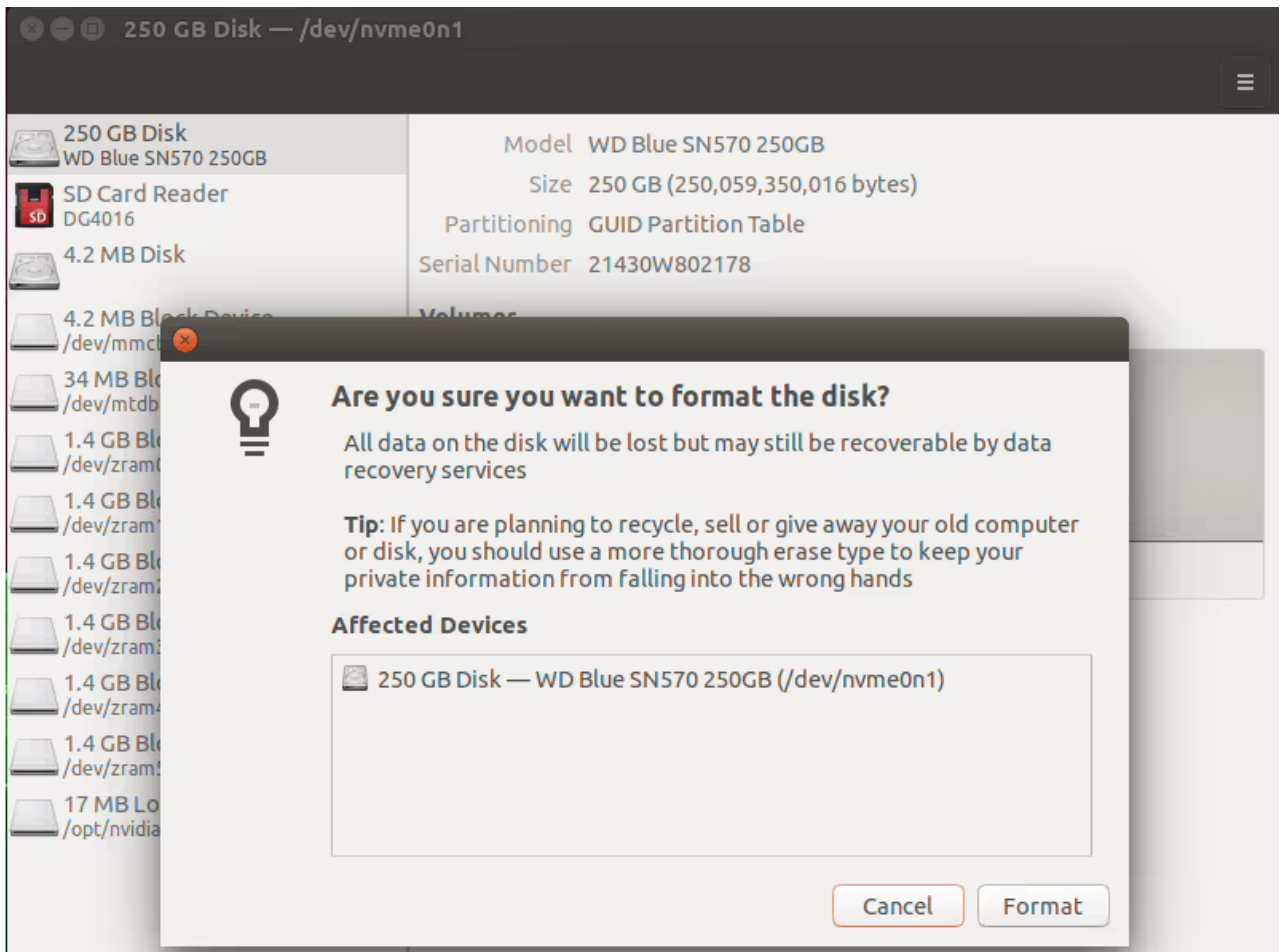


Format the whole disk before creating the storage.



AV710-X4-A User's Manual

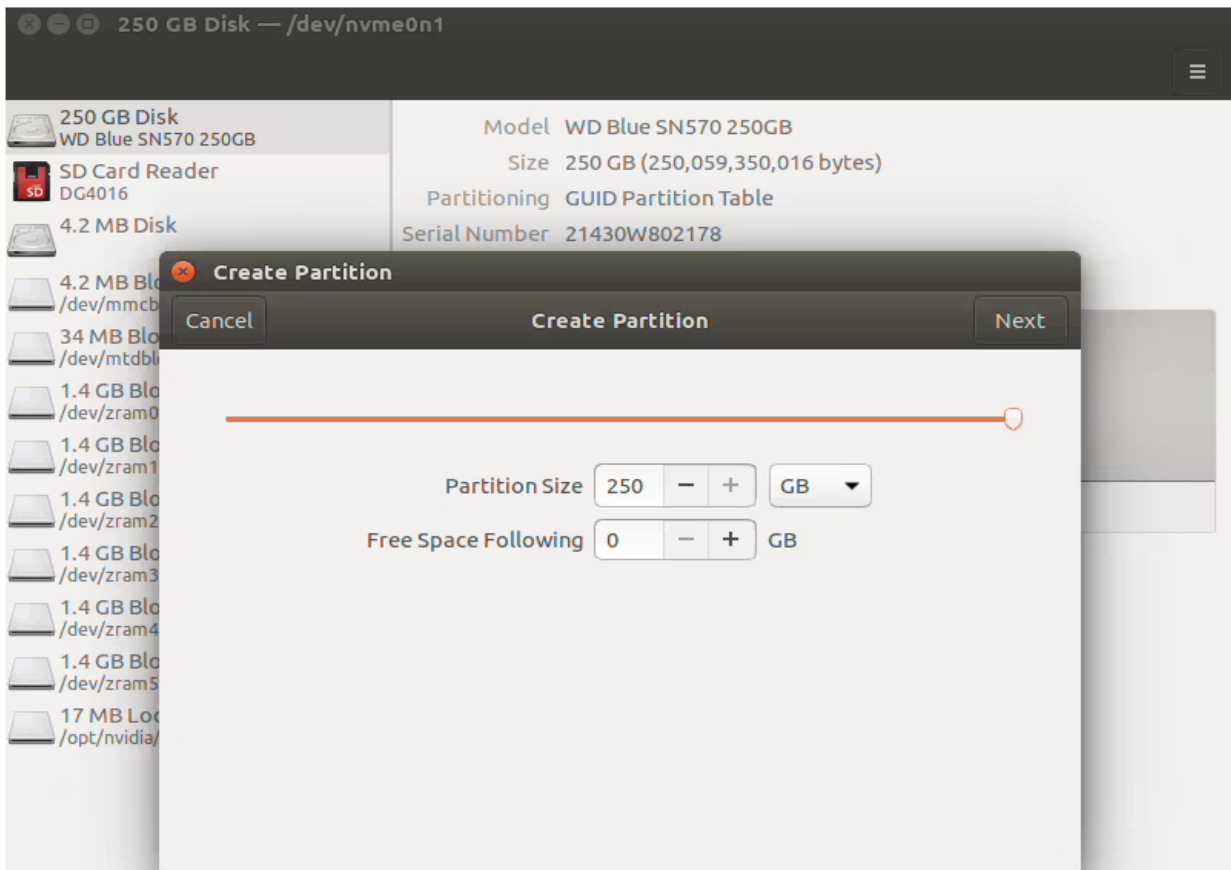
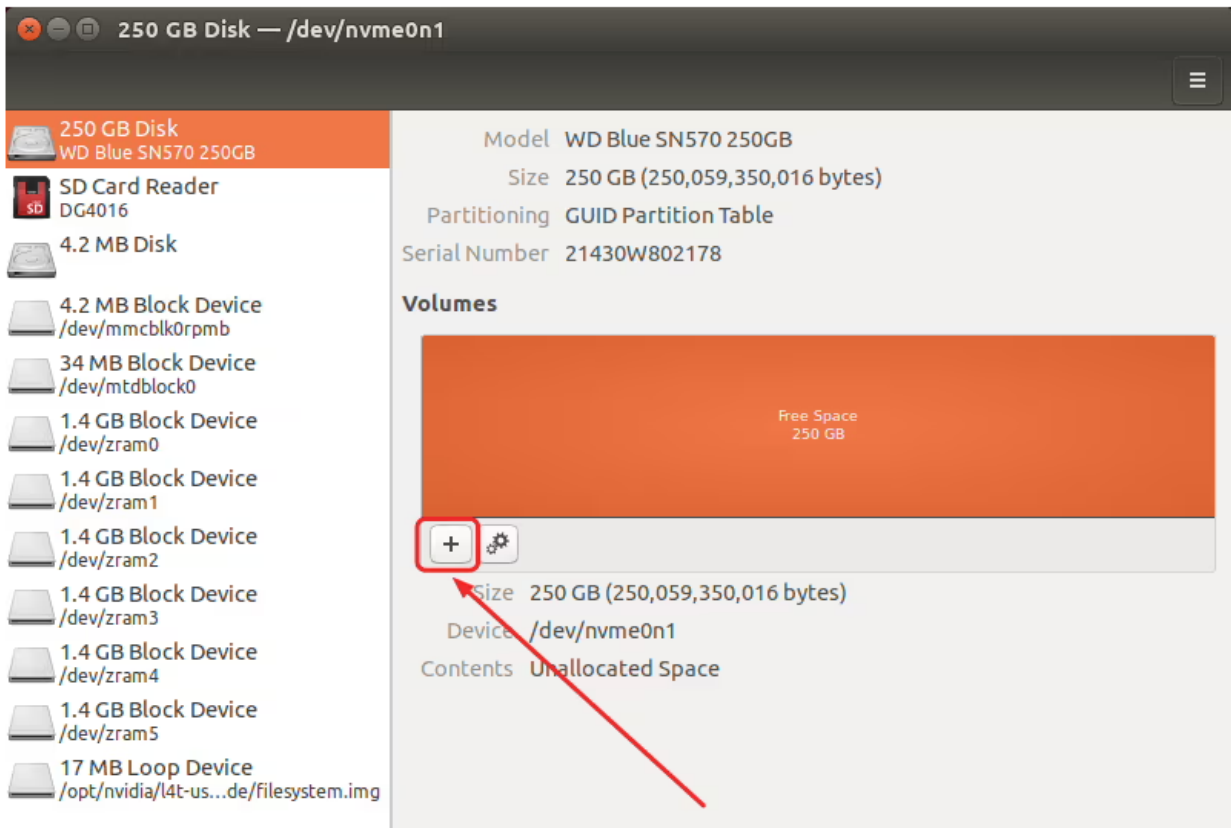
Revision Date: Jun. 06. 2024



AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

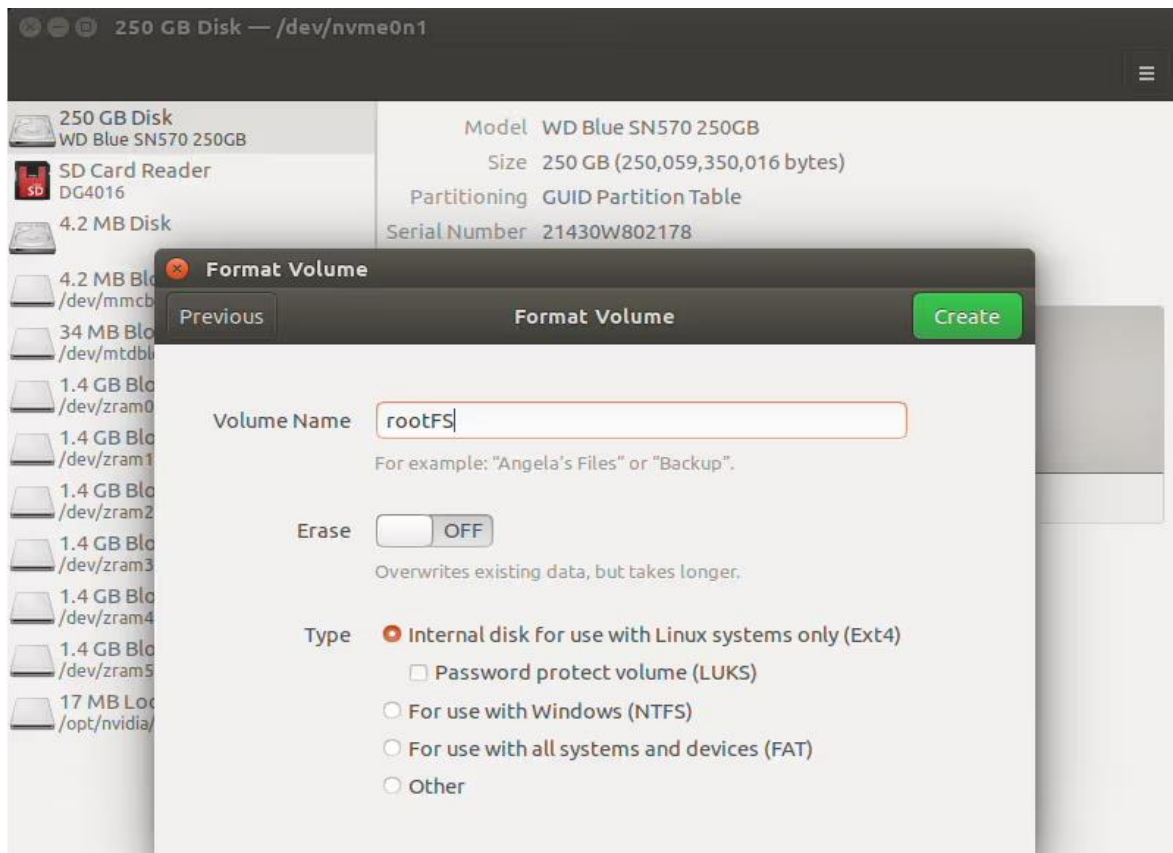
Then, create a new partition from SSD storage.



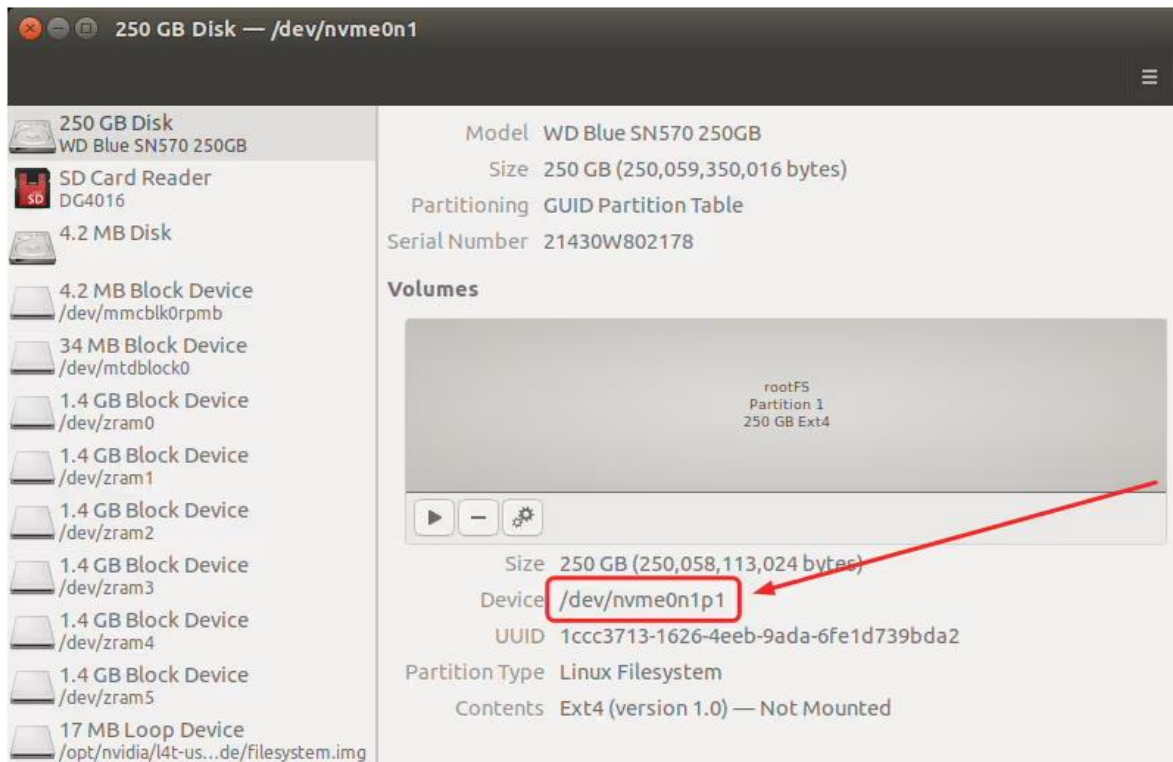
AV710-X4-A User's Manual

Revision Date: Jun. 06. 2024

Format the disk as ext4 format (partition size is up to you but must be min current file system's size).



After creating the partition, check it's name (/dev/nvme0n1p1).



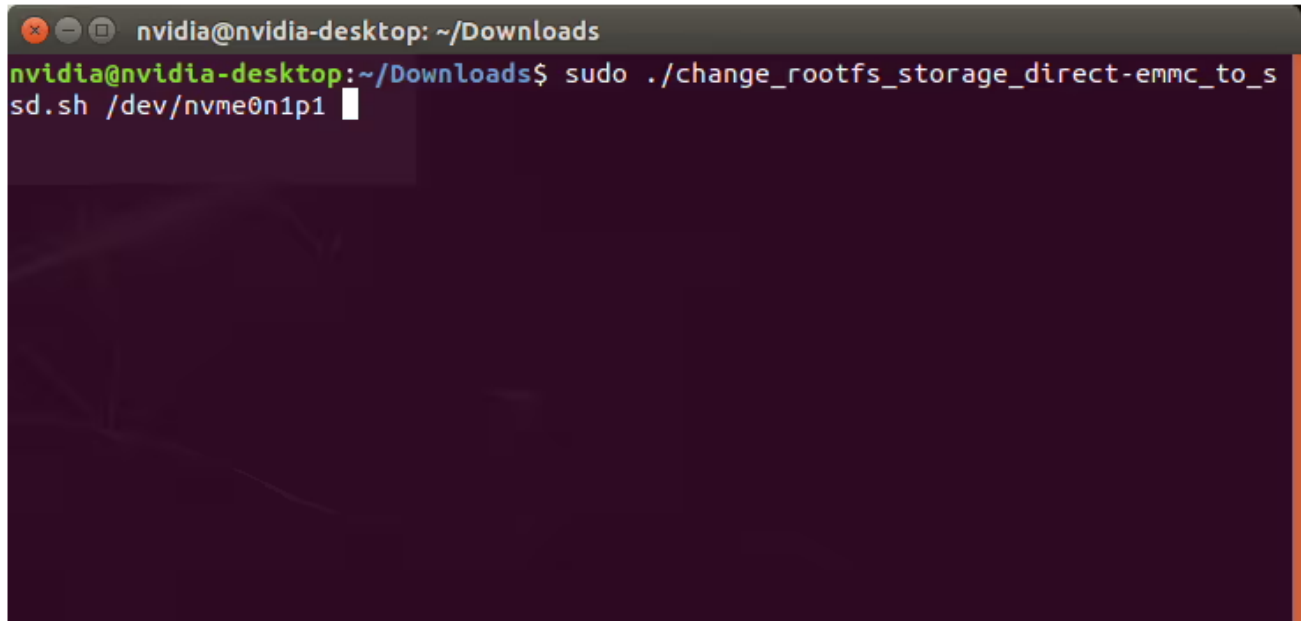
Copying the Root File System

Download the script file from here and extract it. Then, run it with this command below:

```
sudo ./change_rootfs_storage_direct-emmc_to_ssd.sh {EXTERNAL_STORAGE}
```

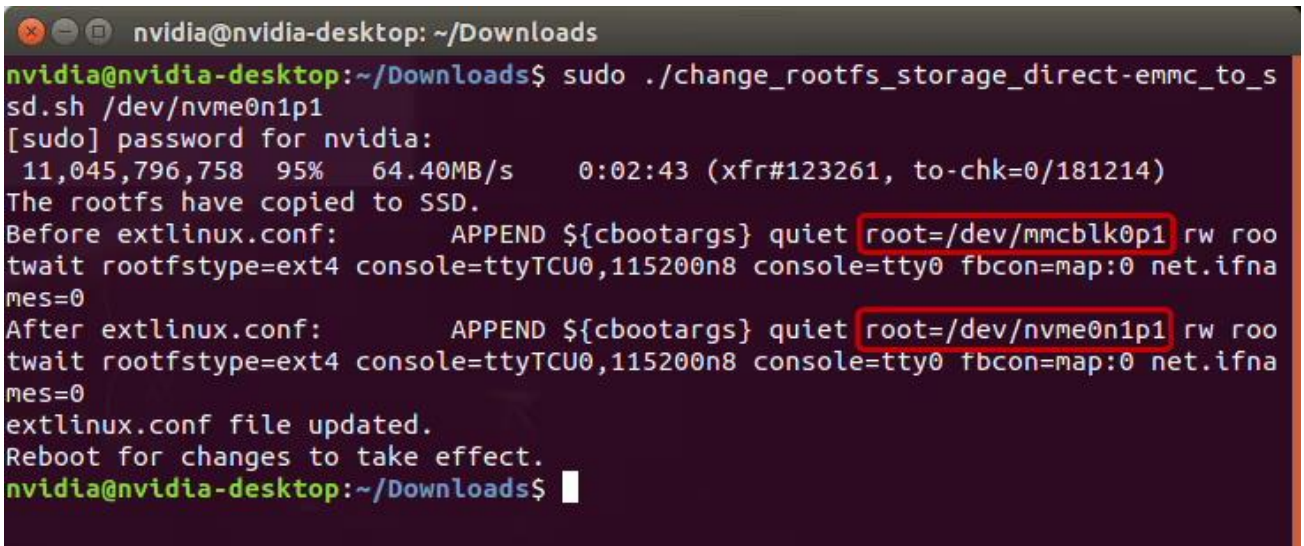
In our setup, we typed this command below:

```
sudo ./change_rootfs_storage_direct-emmc_to_ssd.sh /dev/nvme0n1p1
```



A terminal window titled 'nvidia@nvidia-desktop: ~/Downloads' shows the command `sudo ./change_rootfs_storage_direct-emmc_to_ssd.sh /dev/nvme0n1p1` being entered. The terminal background is dark with light-colored text.

A few times later, the whole file system copied and the root path changed.



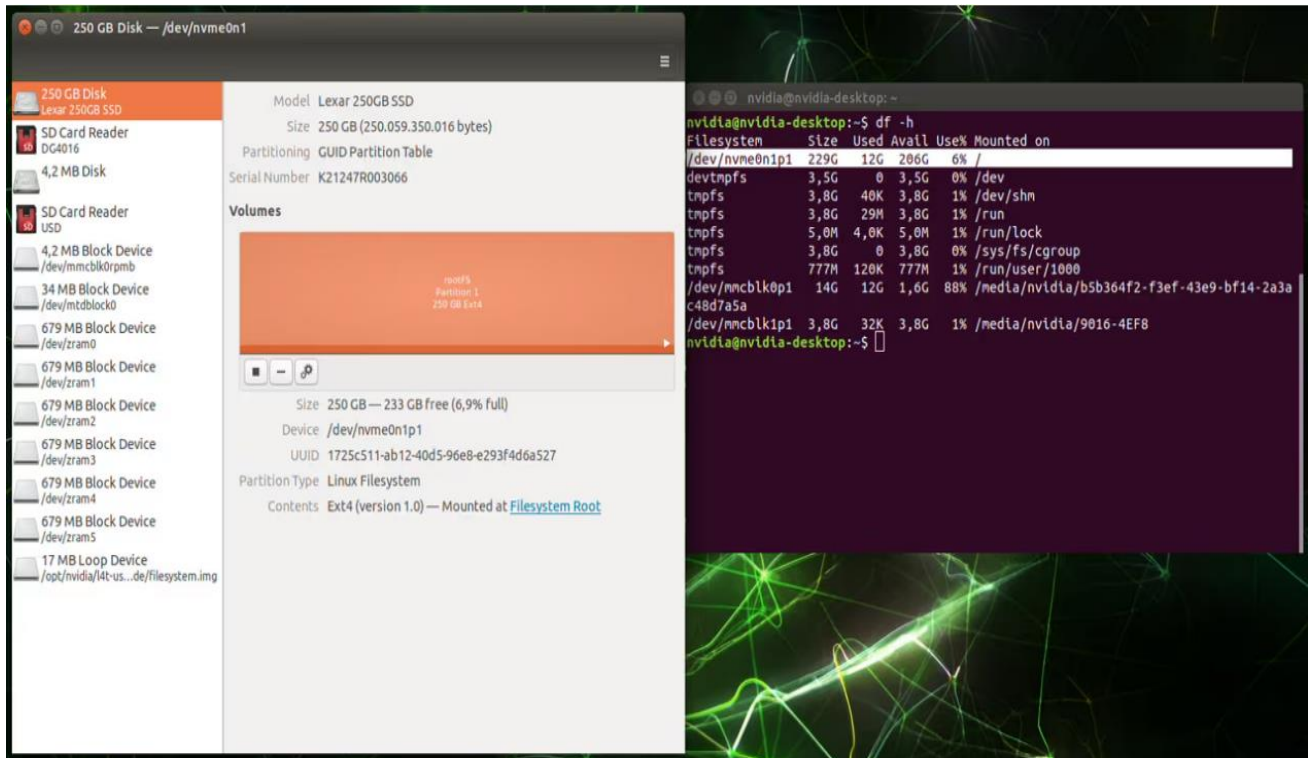
A terminal window titled 'nvidia@nvidia-desktop: ~/Downloads' shows the output of the script. It displays the progress of copying the rootfs to SSD, showing a transfer rate of 64.40MB/s and a time of 0:02:43. The output indicates that the rootfs has been copied and that the `extlinux.conf` file has been updated to change the root path from `root=/dev/mmcblk0p1` to `root=/dev/nvme0n1p1`. The terminal text is as follows:

```
nvidia@nvidia-desktop:~/Downloads$ sudo ./change_rootfs_storage_direct-emmc_to_ssd.sh /dev/nvme0n1p1
[sudo] password for nvidia:
 11,045,796,758 95% 64.40MB/s 0:02:43 (xfr#123261, to-chk=0/181214)
The rootfs have copied to SSD.
Before extlinux.conf: APPEND ${cbootargs} quiet root=/dev/mmcblk0p1 rw rootwait rootfstype=ext4 console=ttyTCU0,115200n8 console=tty0 fbcon=map:0 net.ifnames=0
After extlinux.conf: APPEND ${cbootargs} quiet root=/dev/nvme0n1p1 rw rootwait rootfstype=ext4 console=ttyTCU0,115200n8 console=tty0 fbcon=map:0 net.ifnames=0
extlinux.conf file updated.
Reboot for changes to take effect.
nvidia@nvidia-desktop:~/Downloads$
```

It's time to reboot the Jetson module. Reboot it and check the Root File System copied successfully.

Assignment of the Root File System

```
df -h
```



After rebooting you can see that the new storage is assigned as root file system.

Appendix

Appendix

Standardized Warning Statements

The following statements are industry standard warnings, provided to warn the user of situations which have the potential for bodily injury. Should you have questions or experience difficulty, contact Supermicro's Technical Support department for assistance. Only certified technicians should attempt to install or configure components.

Read this section in its entirety before installing or configuring components.

These warnings may also be found on our website at

http://www.supermicro.com/about/policies/safety_information.cfm.

Battery Handling



Warning! There is the danger of explosion if the battery is replaced incorrectly. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions

電池の取り扱い

電池交換が正しく行われなかった場合、破裂の危険性があります。交換する電池はメーカーが推奨する型、または同等のものを使用下さい。使用済電池は製造元の指示に従って処分して下さい。

警告

電池更換不當會有爆炸危險。請只使用同類電池或製造商推薦的功能相當的電池更換原有電池。請按製造商的說明處理廢舊電池。

警告

電池更換不當會有爆炸危險。請使用製造商建議之相同或功能相當的電池更換原有電池。請按照製造商的說明指示處理廢棄舊電池。